Hydrogeologic Report for Spray Irrigation Expansion at the Inland Bays Regional Wastewater Facilities in Sussex County, Delaware

October 26, 2017

Prepared for:
Sussex County, Delaware

Prepared by:
Whitman, Requardt & Associates, LLP
Baltimore, Maryland

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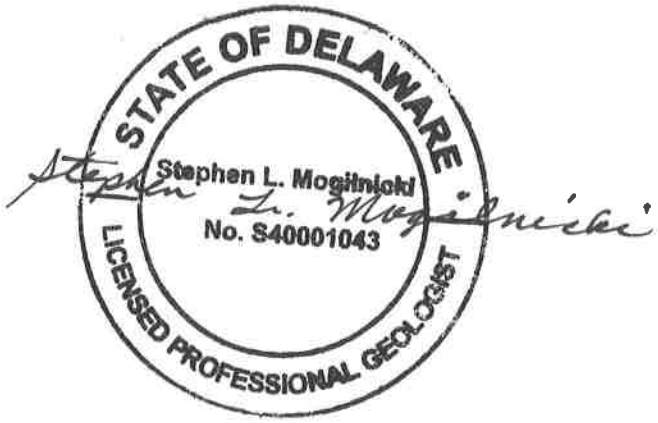

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Table of Contents

Tables

Appendices

1. Introduction

Whitman, Requardt & Associates, LLP (WRA) prepared this hydrogeologic report for the Sussex County, Delaware Engineering Department. A goal was to identify land sufficient to allow an additional 2 million gallons per day (mgd) of effluent disposal capacity by spray irrigation, at the Inland Bays Regional Wastewater Facilities (IBRWF). WRA assessed the conditions at four spray irrigation expansion sites.

The IBRWF is located approximately 10 miles southwest of Lewes, Delaware. WRA developed a 1 inch = 200 feet scale site plan which shows the topography on a 2-ft. contour interval, the proposed effluent disposal areas, and the soil borings and monitoring wells. Previous reports by WRA about the IBRWF are listed in the References section.

Table 1 summarizes the spray irrigation areas, the application rates (inches per week) and effluent disposal capacities (million gallons per day). The expansion sites are designated A, B, C, and D. The IBRWF began operating in 1992. It currently uses eight spray fields and is permitted for 2.65 mgd. Corn and soybeans are grown on the existing spray fields. The expansion sites are wooded and Sussex County plans to spray effluent on trees.

The capacities in Table 1 are on days when conditions are suitable for spraying. Non-spray periods include when it is raining or freezing, when spraying is disallowed based on water level monitoring data, or when spray fields are out of service due to farming activities or field maintenance. The acreages in Table 1 include reductions for State-required spray irrigation buffers.

WRA completed the following tasks: examination of published geologic data; procurement of a driller subcontractor; observations during drilling; selection of soil samples for lab analysis; measurement of a round of water levels in monitoring wells; coordination of an aquifer test; preparation of a water-table elevation map; and prediction of groundwater mounding from new spray fields.

Table 1: Spray Irrigation Areas

Status	Wetted Field Area	Acres	Rate (inches per week)	Effluent Disposal Capacity (mgd)*
Permitted	North Field	103.0	1.86	0.73
	South Field	103.0	1.86	0.73
	North Burton Field	52.0	1.5	0.3
	South Burton Field	41.9	1.0	0.18
	North Hetti-Lingo Field	47.5	1.0	0.18
	South Hetti-Lingo Field	30.48	2.0	0.24
	East Hetti-Lingo Field	34.46	1.0	0.13
	West Hetti-Lingo Field	20.16	2.0	0.16
	subtotals	432.5		2.65
Proposed	Area A (south of Lawson Rd.)	149.8	2.5	1.45
	Area B (north of Lawson Rd.)	13.1	2.5	0.13
	Area C (north of Inland Bays Rd.)	90.0	2.5	0.87
	Area D (south of Inland Bays Rd.)	190.0	2.5	1.84
	subtotals	442.9		4.29
totals		875.4		6.94

2. Regional Geology

WR&A obtained information from publications of the U.S. Geological Survey and the Delaware Geological Survey, which are listed in the References section. The project area is in the Harbeson and Fairmount 7.5-minute quadrangles. Table 2 is a summary of the hydrogeologic units in the vicinity.

Table 2: Hydrogeologic Units

Epoch	Geologic Units		Aquifer	Estimated Thickness (feet)
Pleistocene	Columbia Group	Dune Deposits	Unconfined Aquifer	Up to 15
		Lynch Heights Fm.		3 to 10
		Beaverdam Fm.		110
Miocene	Chesapeake Group	Bethany Fm.	Pocomoke Aquifer	100
		Manokin Fm.	Manokin Aquifer	150
		St. Mary's Fm.		80
		Choptank Fm.		200
		Calvert Fm.		300

Fm. = Formation

Sussex County, Delaware is located in the Atlantic Coastal Plain physiographic province, which has an eastward-thickening wedge of sand, silt and clay that rests on bedrock. According to Vroblesky and Fleck (1991) the top of the bedrock in the study area is approximately 6,500 feet below sea level. The oldest Coastal Plain sediments in eastern Sussex County are several thousand feet of sediments ranging in age from Cretaceous to Eocene.

In Miocene time, the area was submerged by a shallow sea. In this period the Chesapeake Group was deposited, which consists of the following from oldest to youngest: the Calvert Formation, the Choptank Formation, the St. Mary's Formation, the Manokin Formation, and the Bethany Formation. The Calvert Formation (consisting mostly of gray sandy silt) and the Choptank Formation (consisting of gray fine to coarse shelly sand) were deposited in predominantly marine environments. The St. Mary's Formation, the Manokin Formation, and the Bethany Formation were deposited by deltas. The St. Mary's Formation consists of bluish-gray fine sandy clay, with some interbeds of very fine to medium sand. The Manokin Formation consists of a lower unit of silty fine sand, which grades into an upper unit of gray fine to coarse sand. The Bethany Formation consists of gray clay or silt interbedded with fine to very coarse sand.

The sediments of the Columbia Group were deposited during the Pleistocene Epoch on top of the eroded surface of the Chesapeake Group. In the study area, the Columbia Group consists of the Beaverdam Formation, the Lynch Heights Formation, and Pleistocene dune deposits forming sandy ridges.

The Beaverdam Formation was deposited in a fluvial to estuarine environment in the late Pliocene Epoch. It is a heterogeneous unit ranging from very coarse sand with pebbles to silty clay. It has a white, silty matrix that distinguishes it from overlying deposits.

The Lynch Heights Formation is a thin heterogeneous deposit ranging from reddish brown, pale yellow, and light gray silty, clayey, very coarse sand, to pale yellow, light gray gravelly sand. Its estimated thickness in the study area is 3 to 10 feet.

Several aquifers exist in the Coastal Plain deposits of eastern Sussex County, Delaware. The uppermost aquifer is the unconfined aquifer, which exists in the Columbia Group sediments. The unconfined aquifer receives recharge from precipitation, transmits water to the deeper aquifers, and maintains stream flow.

The unconfined aquifer exists in the sandy parts of the Columbia Group. Fine-grained units in the Lynch Heights Formation and the Beaverdam Formation can function as semiconfining units, if they have sufficient thickness and areal extent. The regional base of the unconfined aquifer is the base of the Beaverdam Formation.

The Bethany Formation contains sand units that form the confined Pocomoke Aquifer. The Manokin Formation contains the confined Manokin Aquifer, which is a major water supply source in Sussex County. The contact of the Manokin Formation with the underlying St. Mary's Formation is the base of the fresh-water aquifer system. The base of the Manokin Aquifer is 250 to 300 feet below sea level. The Choptank Formation, which is underneath the St. Mary's Formation, probably contains saline water.

3. Investigation

WRA conducted hydrogeologic investigations in the proposed spray areas designated A, B, C, and D in the report by Accent Environmental (2016). The four areas are land owned by Sussex County. The

Area A is located generally south of Lawson Road, and Area B is north of Lawson Road. Area C is generally north of Inland Bays Road, and Area D is south of Inland Bays Road.

WRA selected locations for soil borings and wells. Surveyors from Adams-Kemp Associates, Inc. of Georgetown, Delaware staked the drilling locations. The surveyors also located domestic water wells within 1,000 feet of the expansion areas.

The initial drilling was in 2014 by Geomatrix, Inc. Additional drilling began in September 2016 by John Hynes & Associates. Table 3 is a summary of the soil borings, which were 20 to 40 feet deep. In total, fifty-one soil borings were completed at the expansion sites. Drillers advanced borings using the hollow-stem auger method and the standard penetration test. Logs for the borings are in Appendix 1.

WRA selected soil samples from borings for laboratory analysis of grain size distribution. Table 4 is a summary of the grain size data. The grain size lab reports are in Appendix 2.

Twenty-one monitoring wells were constructed in the unconfined aquifer by the hollow stem auger method. The wells ranged from 14 to 26 feet deep. Table 5 is a summary of the monitoring wells. The wells have ten feet of 2-inch diameter, PVC well screen with 0.020-inch slots, well gravel pack, and a bentonite seal.

In October 2016, WRA measured a round of water levels in the site monitoring wells, and the data is summarized in Table 6. Water levels measured by Sussex County are included in Appendix 4. For the computation of groundwater elevations, surveyors provided PVC well casing elevations for the monitoring wells to the nearest 0.01 foot.

Table 3: Soil Borings (continues on next page)

Site	Boring	Land Surface Elevation (FASL)	Depth Drilled (FBLS)
A	MW-1	31.5	40
	MW-2	29.2	40
	MW-3	31.3	40
	MW-12	28.6	20
	MW-13	29.4	20
	B-27	31.1	20
	B-28	29.0	20
	B-29	32.4	20
	B-30	28.1	20
B	MW-7	32.7	40
	MW-8	34.1	40
	MW-9	32.0	40
	B-25	34.9	20
	B-26	32.4	20
C	MW-14	30.3	20
	MW-15	29.0	20
	MW-16	36.8	26
	MW-17	37.0	26
	MW-18	33.2	22
	B-1	30.6	20
	B-2	32.5	20
	B-3	33.4	20
	B-4	33.9	20
	B-5	34.0	20
	B-6	34.7	20
	B-7	35.7	20
	B-8	46.0	20
FASL = feet above sea level			
FBLS = feet below land surface			

Table 3: Soil Borings (continued from previous page)

Site	Boring	Land Surface Elevation (FASL)	Depth Drilled (FBLS)
D	MW-19	34.1	24
	MW-20	28.0	20
	MW-21	29.3	20
	MW-22	28.3	20
	MW-23	28.4	20
	MW-24	29.5	20
	MW-25	26.7	20
	MW-26	31.5	26
	B-9	29.9	20
	B-10	29.7	20
	B-11	28.9	20
	B-12	28.2	20
	B-13	28.6	20
	B-14	29.2	20
	B-15	27.4	20
	B-16	27.5	20
	B-17	27.4	20
	B-18	28.8	20
	B-19	27.5	20
	B-20	27.9	20
	B-21	27.3	20
	B-22	30.0	20
	B-23	27.4	20
	B-24	31.6	20

Table 4: Grain Size Data (continues on next page)

Site	Boring	Depth Interval (FBLS)	% Gravel*	% Sand**	% Fines***
A	MW-1	2 – 6	0.0	78.7	21.3
	MW-1	10 - 14	1.3	80.6	18.1
	MW-1	26 - 30	2.2	84.8	13.0
	MW-2	0 - 4	1.4	78.4	20.2
	MW-2	6 - 10	0.0	85.6	14.4
	MW-2	20 - 24	0.0	83.0	17.0
	MW-3	10 - 14	0.7	79.7	19.6
	MW-3	20 - 24	0.7	83.4	15.9
	MW-3	36 - 40	0.0	81.4	18.6
	MW-12	14 - 16	10.3	81.2	8.5
	MW-13	10 – 12	0.2	88.4	11.4
	B-27	12 – 14	0.0	91.5	8.5
	B-28	4 – 6	2.7	88.7	8.6
	B-29	6 – 8	0.4	89.0	10.6
	B-30	18 – 20	4.2	88.1	7.7
B	B-25	14 – 16	0.3	82.0	17.7
	B-26	18 – 20	1.9	19.5	78.6
C	MW-14	16 – 18	0.1	89.9	10.0
	MW-15	16 - 18	1.3	90.6	8.1
	MW-16	10 – 12	0.0	48.9	51.1
	MW-16	24 – 26	0.0	91.8	8.2
	MW-17	16 - 18	0.0	87.4	12.6
	MW-17	24 - 26	0.1	90.8	9.1
	MW-18	12 - 14	0.4	88.7	10.9
	MW-18	16 – 18	0.4	88.9	10.7
	B-1	4 - 6	0.2	55.2	44.6
	B-2	14 – 16	3.0	84.3	12.7
	B-3	10 – 12	0.2	70.9	28.9
	B-3	16 - 18	1.1	84.5	14.4
	B-4	6 – 8	0.2	49.7	50.1
	B-4	16 - 18	0.1	89.7	10.2
	B-5	12 – 14	0.7	87.3	12.0
	B-6	16 – 18	2.7	89.2	8.1
	B-7	2 – 4	0.2	95.7	4.1
	B-7	16 - 18	1.3	90.4	8.3
	B-8	16 - 18	0.0	87.6	12.4

*Gravel is coarser than the No. 10 sieve.
**Sand is finer than the No. 10 sieve and coarser than the No. 200 sieve.
***Fines are finer than the No. 200 sieve.
FBLS = feet below land surface

Table 4: Grain Size Data (continued from previous page)

Site	Boring	Depth Interval (FBLS)	% Gravel*	% Sand**	% Fines***
D	MW-19	14 - 16	0.1	92.0	7.9
	MW-19	22 – 24	0.3	87.2	12.5
	MW-20	14 – 16	24.6	67.2	8.2
	MW-21	16 – 18	0.6	90.3	9.1
	MW-22	8 - 10	0.6	85.0	14.4
	MW-22	12 – 14	1.1	89.8	9.1
	MW-23	12 – 14	1.9	87.9	10.2
	MW-24	16 - 18	11.8	82.5	5.7
	MW-25	8 - 10	0.0	85.6	14.4
	MW-25	12 – 14	0.3	78.1	21.6
	MW-25	16 - 18	1.4	89.1	9.5
	MW-26	6 - 8	0.6	82.3	17.1
	MW-26	24 – 26	4.6	83.5	11.9
	B-9	2 – 4	1.8	72.9	25.3
	B-10	8 – 10	2.8	84.7	12.5
	B-11	14 – 16	0.9	93.2	5.9
	B-12	8 – 10	0.6	86.2	13.2
	B-13	10 - 12	0.0	81.7	18.3
	B-14	16 – 18	0.1	88.1	11.8
	B-15	8 - 10	3.9	83.1	13.0
	B-15	14 - 16	0.9	87.6	11.5
	B-16	8 - 10	1.3	86.2	12.5
	B-16	12 – 14	0.4	92.6	7.0
	B-17	10 - 12	0.0	83.3	16.7
	B-18	14 - 16	0.3	92.7	7.0
	B-19	10 - 12	2.4	88.1	9.5
	B-19	16 - 18	22.1	72.7	5.2
	B-20	12 – 14	1.1	91.3	7.6
	B-21	12 - 14	0.2	74.0	25.8
	B-22	12 – 14	0.1	17.6	82.3
	B-23	4 – 6	0.1	98.0	1.9
	B-23	12 - 14	0.5	88.7	10.8
	B-24	12 – 14	0.4	34.2	65.4

*Gravel is coarser than the No. 10 sieve.
**Sand is finer than the No. 10 sieve and coarser than the No. 200 sieve.
***Fines are finer than the No. 200 sieve.
FBLS = feet below land surface

Table 5: Monitoring Well Construction Data

Site	Well No.	DNREC Permit No.	Screened Interval (FBLS)	PVC Height* (FALS)	Top of PVC Elevation** (FASL)	Year Drilled
A	MW-1	248848	11.5 – 21.5	1.45	34.11	2014
	MW-2	248849	10 - 20	1.64	31.41	2014
	MW-3	248850	11.5 – 21.5	1.41	33.60	2014
	MW-12	256134	10 - 20	2.43	31.02	2016
	MW-13	256135	10 - 20	1.85	31.24	2016
B	MW-7	248851	10 - 20	1.71	35.34	2014
	MW-8	248847	10 - 20	1.68	36.36	2014
	MW-9	248852	8 - 14	1.70	34.72	2014
C	MW-14	255715	10 - 20	2.74	33.14	2016
	MW-15	255716	10 - 20	2.52	31.50	2016
	MW-16	255717	16 - 26	2.43	39.23	2016
	MW-17	255718	16 - 26	2.47	39.48	2016
	MW-18	255719	12 - 22	2.49	35.69	2016
D	MW-19	255720	16 - 26	2.26	36.37	2016
	MW-20	255721	10 - 20	2.98	30.93	2016
	MW-21	255722	10 - 20	2.34	31.70	2016
	MW-22	255723	10 - 20	2.47	30.74	2016
	MW-23	255724	10 - 20	2.09	30.50	2016
	MW-24	255725	10 - 20	2.39	31.93	2016
	MW-25	255726	10 - 20	2.65	29.40	2016
	MW-26	255727	16 - 26	2.56	34.05	2016
FALS = feet above land surface. FBLS = feet below land surface						
FASL = feet above sea level *measured by WRA						
**elevations reported by Adams-Kemp Associates, Inc. on June 22, 2017						

WRA coordinated an aquifer test in the unconfined aquifer to estimate the transmissivity of the aquifer, which is its ability to transmit water. Somerset Well Drilling Co., Inc. performed the 72-hour test as a subcontractor to John Hynes & Associates. The aquifer test data is in Appendix 5.

For aquifer testing, Somerset constructed a 6-inch diameter pumping well (DW-2) with 33 feet of screen. They also drilled a 2-inch diameter observation well (DW-1) having similar screen. The two wells were 30 feet apart. Borehole geophysical data obtained during drilling indicated the base of the unconfined aquifer is 100 feet below the land surface.

The aquifer test started on June 19, 2017. The static water level was approximately 8 feet below the land surface. The pumping rate was 101.8 gallons per minute. WRA interprets that the most reliable data from the test is from 7 to 700 elapsed minutes, when the observation well drawdown falls roughly on a straight line in a semilog graph of drawdown vs. time. After the aforementioned straight-line period, heavy rain began about 3,600 minutes into the test. Rain continued for about three hours and likely influenced the later drawdown data.

WRA derived a transmissivity from the test equal to 51,000 square feet per day. The hydraulic conductivity of the aquifer is 550 feet/day, based on dividing the transmissivity by the saturated aquifer thickness of 92 feet.

Table 6: Water Levels in Monitoring Wells in October 2016

Site	Well No.	Date Measured	Depth to Water* (FBTOPVC)	PVC Height* (FALS)	Depth to Water** (FBLS)	Top of PVC Elevation*** (FASL)	Groundwater Elevation** (FASL)
A	MW-1	10/14/2016	7.72	1.45	6.27	34.11	26.39
	MW-2	10/14/2016	8.45	1.64	6.81	31.41	22.96
	MW-3	10/14/2016	10.47	1.41	9.06	33.60	23.13
	MW-12	10/14/2016	6.43	2.43	4.05	31.02	24.59
	MW-13	10/14/2016	7.63	1.85	5.78	31.24	23.61
B	MW-7	10/14/2016	5.21	1.71	3.50	35.34	30.13
	MW-8	10/14/2016	5.85	1.68	4.17	36.36	30.51
	MW-9	10/14/2016	5.40	1.70	3.70	34.72	29.32
C	MW-14	10/06/2016	8.89	2.74	6.15	33.14	24.25
	MW-15	10/06/2016	6.90	2.52	4.38	31.50	24.60
	MW-16	10/06/2016	16.13	2.43	13.70	39.23	23.10
	MW-17	10/06/2016	16.83	2.47	14.26	39.48	22.65
	MW-18	10/06/2016	11.93	2.49	9.44	35.69	23.76
D	MW-19	10/06/2016	12.10	2.26	9.84	36.37	24.27
	MW-20	10/06/2016	7.21	2.98	4.23	30.93	23.72
	MW-21	10/06/2016	9.08	2.34	6.74	31.70	22.62
	MW-22	10/06/2016	7.98	2.47	5.51	30.74	22.76
	MW-23	10/06/2016	8.35	2.09	6.26	30.50	22.15
	MW-24	10/06/2016	10.29	2.39	7.90	31.93	21.64
	MW-25	10/06/2016	8.70	2.65	6.05	29.40	20.70
	MW-26	10/06/2016	13.48	2.56	10.92	34.05	20.57
FALS = feet above land surface. FBLS = feet below land surface. FBTOPVC = feet below top of PVC							
*measured by WRA. **computed by WRA. ***Elevations from Adams-Kemp Associates 6/22/2017							

4. Site Hydrogeology

The land surface at the expansion sites varies from 27 to 46 feet above sea level. Based on the borings and lab grain size tests, the uppermost 40 feet of the Columbia Group sediments consist predominantly of brown, orange-brown, or gray quartz sand, with lesser amounts of silt and gravel. Site borings intermittently encountered scattered, discontinuous lenses of fine-grained sediments that are not laterally extensive.

WRA prepared a water table elevation map on the site plan at a scale of 1 inch = 200 feet based on the data in Table 6. The groundwater flow direction is to the southeast. The hydraulic gradient across Areas A and B is 0.0027. The hydraulic gradient across Areas C and D is 0.00083.

Effluent disposal sites are necessarily assessed in the "wet season" of January to April, when water levels in the unconfined aquifer tend to be the shallowest. Appendix 4 contains hydrographs of the available wet season data. Sussex County staff measured wet season water levels in monitoring wells at Areas A and B during 2015 to 2017. At Area A, the shallowest water table was approximately 6 feet below the land surface. At Area B, the shallowest water table was approximately 4 feet below the land surface. The range between the shallowest and deepest water levels was approximately 6 to 8 feet In individual wells at Areas A and B.

Site-wide wet season data is not yet available for Areas C and D, and the next opportunity to make observations is in 2018. In October 2016, groundwater was 6 feet below the land surface or deeper in the six wells at Area C, except in MW-15 in the southwest corner, where water was approximately 4 feet below the land surface. At Area D in October 2016, water was 5 feet below the land surface or deeper in the eight wells, except in MW-20 on the northwest side where it was approximately 4 feet.

5. Groundwater Mounding

Groundwater mounding is the rise above the initial water level surface in an aquifer, as a result of infiltration. WRA assessed mounding using the approach in U. S. Geological Survey Scientific Investigations Report 2010-5102, which is based on the Hantush method.

The Hantush calculation provides conservative (high) mound heights, because of the following hydraulic assumptions:

- Surface water runoff is assumed to be zero, i.e. all the sprayed effluent is assumed to reach the water table.
- Evapotranspiration of effluent from soil or plants is also assumed to be zero.
- The water table is assumed to be initially flat, although it actually has a hydraulic gradient that will allow groundwater mounds to decay.
- The analysis assumes that effluent loading is continuous for the whole period, although actually it will be intermittent, which will allow mounds to decay.
- The analysis assumes there are no constant head boundaries such as streams, which function as drains.

The groundwater mounding analysis requires input values for the following:

- rate of effluent applications
- area of application
- initial saturated thickness of the unconfined aquifer
- porosity of the aquifer material
- hydraulic conductivity of the aquifer
- duration of application

DNREC has typically permitted spray application rates up to 2.5 inches per week at suitable sites. In the mounding analysis, WRA assessed the impact of 2.5 inches per week, which is equivalent to 0.03 feet/day.

The calculation requires an estimate of the half length and half width of the application area. Half the side of an equivalent square area is 1,277 feet for Area A; 377.5 feet for Area B; 990 feet for Area C; and 1,438.5 feet for Area D.

The initial saturated thickness of the aquifer was assumed to be 96 feet in the groundwater mounding analysis. This is equivalent to the 100-ft. thick layer of sand observed above the confining layer at well DW-2, minus a water level of 4 feet deep. The assumed aquifer porosity is 0.25, which is a typical value for sand. The hydraulic conductivity used in the calculations was 550 feet/day, which was determined by the aquifer test.

Table 7 contains estimates of the theoretical groundwater mound height above the initial water table at the expansion areas. The prediction is for time periods varying from 1 day to 1 year. The predicted mound heights are less than 2 feet, after a year of continuous spraying at each area. Conservatively assuming a 4-ft. deep water table, the theoretical 1-year mounds would remain underneath the required 2-ft. thick unsaturated zone buffer. The buffer is between the land surface and the top of the mound.

Table 7: Groundwater Mound Heights

Spray Area	1 day	7 days	30 days	365 days
A	0.1	0.5	0.9	1.6
B	0.05	0.1	0.14	0.2
C	0.1	0.4	0.6	1.0
D	0.1	0.5	1.0	1.9
data in feet				

6. Conclusion

In 2016 – 2017, WRA conducted a hydrogeologic investigation at four wooded spray irrigation expansion sites at the Inland Bays Regional Wastewater Facilities in Sussex County, Delaware. A goal was to identify land to develop an additional 2 million gallons per day (mgd) of effluent disposal capacity. Among the four areas assessed, Areas C and D are closer to the wastewater plant, and Areas A and B are further west of the plant.

WRA performed a groundwater mounding analysis using site-derived hydrogeologic parameters and conservative assumptions. The analysis indicated that 2.71 mgd of disposal at Areas C and D combined, based on spraying 2.5 inches per week, is feasible from a hydraulic standpoint. The analysis also indicated that 1.58 mgd at 2.5 inches per week is feasible at Areas A and B combined.

The State typically requires weekly monitoring of water levels in monitoring wells during the January to April wet season, as part of the permitting process for new spray irrigation fields. Sussex County obtained wet season data at Area A and Area B. Wet season data remains to be collected at Area C and Area D.

The State also requires that the ambient groundwater quality be established at the new spray irrigation areas. Ambient conditions are assessed by performing three rounds of groundwater sample collection and laboratory analysis, with the sampling events occurring thirty days apart. The State guidelines have a specific list of chemical parameters for the groundwater sampling.

WRA recommends that Sussex County perform the aforementioned wet season monitoring and groundwater quality sampling, to facilitate permitting of the new sites.

7. References

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Whitman, Requardt & Associates, LLP. 2012. Hydrogeologic Report for Effluent Disposal at the South Hetti Lingo, West Hetti Lingo, and East Hetti Lingo Spray Irrigation Fields at the Inland Bays Regional Wastewater Facilities in Sussex County, Delaware. August 15, 2012.

Appendix 1

Boring and Well Logs

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

PHONE: 302-739-9944
FAX: 302-739-7764

STATE OF DELAWARE
DEPARTMENT OF NATURE RESOURCES AND ENVIRONMENTAL CONTROL

WELL COMPLETION REPORT

http://www.dnrec.state.de.us/

WELL COMPLETION REPORT MUST BE RETURNED WITHIN 30 DAYS OF CONSTRUCTION. A WELL FORMATION LOG MUST BE INCLUDED WITH THIS REPORT.

-Authorization Number-

40007898

ILLEGIBLE OR INCOMPLETE FORMS WIIL BE RETURNED

PLEASE PRINT OR TYPE - USE BLUE OR BLACK INK ONLY

Permit #: 28848 Local ID: MW-1
Tax Map/Parcel #: 234-21.00-151.00
Property Owner: SUSSEX COUNTY COUNCIL
Water Well Contractor: GEOMATRIX DRILLING DNREC Lic #: 806
Well Driller In Charge During Construction: PAUL J. SUIT

DRILLING / EXCAVATION METHOD

☑ Auger ☐ Bored ☐ Mud Rotary
☐ Driver ☐ Jetted ☐ Air Rotary
☐ Cable Tool ☐ Washed ☐ Reverse Rotary
☐ Other (Specify): _____

Total Depth Of Excavation (Feet BGS): 21.5
Construction Date: 12-11-14

CASING INSTALLATION:

	INNER	OUTER (1)	OUTER (2)	OUTER (3)
Casing Top (Inches AGS):	24			
Casing Bottom (Feet BGS):	11.5			
Casing Diameter (Inches):	2			
Casing Material:	PVC			

Gravel Pack Size (#): 2 AGS=Above Ground Surface BGS=Below Ground Surface

SCREEN INSTALLATION:

Screen Top (Feet BGS): 11.5
Screen Bottom (Feet BGS): 21.5
Screen Diameter (Inches): 2
Screen Material: PVC
Screen Slot Size (1000 of an Inch): 0.20

WELL USE:

☐ Domestic ☐ Industrial ☐ Heat Pump Supply
☐ Irrigation ☐ Public ☐ Heat Pump Recharge
☐ Agricultural ☐ Misc. Public ☐ Closed Loop Heat Pump
☐ Agricultural/Lawn Irrigation
☐ Other (Specify) MONITORING.

TYPE OF PERMANENT PUMP INSTALLED: N/A

Pump Manufacturer: _____ Horsepower: _____
Rated Capacity: _____ (GPM) Pump Intake Setting(ft. BGS): _____
Pump Type: ☐ Submersible ☐ Jet ☐ Vertical Turbine Pump
Pump Installed By: _____ ☐ Others Date: _____

Gravel Pack: From: 9.5 Feet To: 21.5 Feet
Grout Type: ☐ Bentonite Clay ☑ Cement ☐ Bentonite Clay Plug
Other: 0 From: 0 Feet To: 9.5 Feet
Type Of Non-Grout Backfill Of Well Annulus: _____
From: _____ Feet To: _____ Feet
Static Water Level: 14 Feet ☑ Below ☐ Above Ground Surface
Pumping Water Level: _____ Feet On (Date): _____
After: _____ Hours Pumping Rate: _____ GPM
Pumping Method /Device: ☐ Airlift ☐ Mechanical (Pump) Other: _____
Was A Geophysical Log Taken? ☐ Yes ☑ No If "Yes", By: _____

WELL HEAD COMPLETION:

Type: ☐ Pitless Adapter ☐ Standard "T"
☐ Well Pit ☐ Pad Mount
☑ Other - Specify: STICK UP STEEL COVER
Well Head Completed: 24 Inches ☑ Above ☐ Below Ground Surface
Was The Well Tag Attached In Accordance With Current Regulations?
☑ YES ☐ NO If "NO", Please Explain:

Site Plan - **If different from original application, *must*** note changes such as distances from well to house, property lines, nearest road, **and all nearby septic systems and central sewer lines** (included suitable plot plan if available).

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT.

Signature - **Well Driller in Charge of Well Construction**

PAUL J. SUIT # 603 12-16-14
Well Driller License # Date

White - DNREC • Canary - Contractor • Pink - Owner

Doc No. 40-08/07/01/10 - CRR 1

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

PHONE: 302-739-9944
FAX: 302-739-7764

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-Authorization Number-

40007898

ILLEGIBLE OR INCOMPLETE FORMS WILL BE RETURNED

PLEASE PRINT OR TYPE - USE BLUE OR BLACK INK ONLY

Permit #: 248849 Local ID: MW-2
Tax Map/Parcel #: 234-21.00-151.00
Property Owner: SUSSEX COUNTY COUNCIL
Water Well Contractor: GEOMATRIX DRILLING WC Lic #: 806
Well Driller In Charge During Construction: PAUL J. SUIT

DRILLING / EXCAVATION METHOD

- ☑ Auger
- ☐ Bored
- ☐ Mud Rotary
- ☐ Driver
- ☐ Jetted
- ☐ Air Rotary
- ☐ Cable Tool
- ☐ Washed
- ☐ Reverse Rotary
- ☐ Other (Specify): _____

Total Depth Of Excavation (Feet BGS): 20
Construction Date: 12-11-14

CASING INSTALLATION:

	INNER	OUTER (1)	OUTER (2)	OUTER (3)
Casing Top (Inches AGS):	24			
Casing Bottom (Feet BGS):	10			
Casing Diameter (Inches):	2			
Casing Material:	PVC			

Gravel Pack Size (#): 2
AGS=Above Ground Surface BGS=Below Ground Surface

SCREEN INSTALLATION:

Screen Top (Feet BGS): 10
Screen Bottom (Feet BGS): 20
Screen Diameter (Inches): 2
Screen Material: PVC
Screen Slot Size (1000 of an Inch): 0120

WELL USE:

- ☐ Domestic
- ☐ Industrial
- ☐ Heat Pump Supply
- ☐ Irrigation
- ☐ Public
- ☐ Heat Pump Recharge
- ☐ Agricultural
- ☐ Misc. Public
- ☐ Closed Loop Heat Pump
- ☐ Agricultural/Lawn Irrigation
- ☑ Other (Specify) MONITORING

TYPE OF PERMANENT PUMP INSTALLED: N/A

Pump Manufacturer: _____ Horsepower: _____
Rated Capacity: _____ (GPM) Pump Intake Setting(ft. BGS): _____
Pump Type: ☐ Submersible ☐ Jet ☐ Vertical Turbine Pump
Pump Installed By: _____ ☐ Others Date: _____

Gravel Pack: From: 8 Feet To: 20 Feet
Grout Type: ☐ Bentonite Clay ☑ Cement ☐ Bentonite Clay Plug
Other: _____ From: 0 Feet To: 8 Feet
Type Of Non-Grout Backfill Of Well Annulus: _____
From: _____ Feet To: _____ Feet
Static Water Level: 12 Feet ☑ Below ☐ Above Ground Surface
Pumping Water Level: _____ Feet On (Date): _____
After: _____ Hours Pumping Rate: _____ GPM
Pumping Method /Device: ☐ Airlift ☐ Mechanical (Pump) Other: _____
Was A Geophysical Log Taken? ☐ Yes ☑ No If "Yes", By: _____

WELL HEAD COMPLETION:

Type:
- ☐ Pitless Adapter
- ☐ Standard "T"
- ☐ Well Pit
- ☐ Pad Mount
- ☑ Other - Specify: STICK UP STEEL COVER

Well Head Completed: 24 Inches ☑ Above ☐ Below Ground Surface
Was The Well Tag Attached In Accordance With Current Regulations?
☑ YES ☐ NO If "NO", Please Explain:

Site Plan - **If different from original application, *must*** note changes such as distances from well to house, property lines, nearest road, **and all nearby septic systems and central sewer lines** (included suitable plot plan if available).

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT.

Paul J. Suit
Signature - Well Driller in Charge of Well Construction

PAUL J. SUIT # 603 12-16-14
Well Driller License # Date

White - DNREC • Canary - Contractor • Pink - Owner

Doc No. 40-08/07/01/10 - CRR 1

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

PHONE: 302-739-9944
FAX: 302-739-7764

STATE OF DELAWARE
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-Authorization Number-

40087898

ILLEGIBLE OR INCOMPLETE FORMS WIIL BE RETURNED

PLEASE PRINT OR TYPE - USE BLUE OR BLACK INK ONLY

Permit #: 248850 Local ID: MW-3
Tax Map/Parcel #: 234-21.00-151.00
Property Owner: SUSSEX COUNTY COUNCIL
Water Well Contractor: GEOMATRIX DRILLING WC Lic #: 806
Well Driller In Charge During Construction: PAUL J. SOIT

DRILLING / EXCAVATION METHOD

☑ Auger ☐ Bored ☐ Mud Rotary
☐ Driver ☐ Jetted ☐ Air Rotary
☐ Cable Tool ☐ Washed ☐ Reverse Rotary
☐ Other (Specify): _____

Total Depth Of Excavation (Feet BGS): 21.5
Construction Date: 12-12-14

CASING INSTALLATION:

	INNER	OUTER (1)	OUTER (2)	OUTER (3)
Casing Top (Inches AGS):	24			
Casing Bottom (Feet BGS):	11.5			
Casing Diameter (Inches):	2			
Casing Material:	PVC			

Gravel Pack Size (#): 2
AGS=Above Ground Surface BGS=Below Ground Surface

SCREEN INSTALLATION:

Screen Top (Feet BGS): 11.5
Screen Bottom (Feet BGS): 21.5
Screen Diameter (Inches): 2
Screen Material: PVC
Screen Slot Size (1000 of an Inch): 0.020

WELL USE:

☐ Domestic ☐ Industrial ☐ Heat Pump Supply
☐ Irrigation ☐ Public ☐ Heat Pump Recharge
☐ Agricultural ☐ Misc. Public ☐ Closed Loop Heat Pump
☐ Agricultural/Lawn Irrigation
☐ Other (Specify) MONITORING

TYPE OF PERMANENT PUMP INSTALLED: N/A

Pump Manufacturer: _____ Horsepower: _____
Rated Capacity: _____ (GPM) Pump Intake Setting(ft. BGS): _____
Pump Type: ☐ Submersible ☐ Jet ☐ Vertical Turbine Pump
Pump Installed By: _____ ☐ Others Date: _____

Gravel Pack: From: 9.5 Feet To: 21.5 Feet
Grout Type: ☐ Bentonite Clay ☑ Cement ☐ Bentonite Clay Plug
Other: _____ From: 0 Feet To: 9.5 Feet
Type Of Non-Grout Backfill Of Well Annulus: _____
From: _____ Feet To: _____ Feet
Static Water Level: 13 Feet ☑ Below ☐ Above Ground Surface
Pumping Water Level: _____ Feet On (Date): _____
After: _____ Hours Pumping Rate: _____ GPM
Pumping Method /Device: ☐ Airlift ☐ Mechanical (Pump) Other: _____
Was A Geophysical Log Taken? ☐ Yes ☑ No If "Yes", By: _____

WELL HEAD COMPLETION:

Type: ☐ Pitless Adapter ☐ Standard "T"
☐ Well Pit ☐ Pad Mount
☑ Other - Specify: STICK UP STEEL COVER
Well Head Completed: 24 Inches ☑ Above ☐ Below Ground Surface
Was The Well Tag Attached In Accordance With Current Regulations?
☑ YES ☐ NO If "NO", Please Explain:

Site Plan - **If different from original application, *must*** note changes such as distances from well to house, property lines, nearest road, **and all nearby septic systems and central sewer lines** (included suitable plot plan if available).

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT.

Paul Soit
Signature - **Well Driller in Charge of Well Construction**

PAUL J. SOIT #603 12-16-14
Well Driller License # Date

White - DNREC • Canary - Contractor • Pink - Owner

Doc No. 40-08/07/01/10 - CRR 1

MAIL TO:

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ILLEGIBLE OR INCOMPLETE FORMS WILL BE RETURNED

PLEASE PRINT OR TYPE - USE BLUE OR BLACK INK ONLY

Permit #: 248851 Local ID: MW-7
Tax Map/Parcel #: 234-21.00 - 151.00
Property Owner: SUSSEX COUNTY COUNCIL
Water Well Contractor: GEOMATRIX DRILLING WC Lic #: 806
Well Driller In Charge During Construction: PAUL J. SUIT

DRILLING / EXCAVATION METHOD

☑ Auger ☐ Bored ☐ Mud Rotary
☐ Driver ☐ Jetted ☐ Air Rotary
☐ Cable Tool ☐ Washed ☐ Reverse Rotary
☐ Other (Specify): _____

Total Depth Of Excavation (Feet BGS): 20
Construction Date: 12-8-14

CASING INSTALLATION:

	INNER	OUTER (1)	OUTER (2)	OUTER (3)
Casing Top (Inches AGS):	24			
Casing Bottom (Feet BGS):	10			
Casing Diameter (Inches):	2			
Casing Material:	PVC			

Gravel Pack Size (#): 2
AGS=Above Ground Surface BGS=Below Ground Surface

SCREEN INSTALLATION:

Screen Top (Feet BGS): 10
Screen Bottom (Feet BGS): 20
Screen Diameter (Inches): 2
Screen Material: PVC
Screen Slot Size (1000 of an Inch): 0120

WELL USE:

☐ Domestic ☐ Industrial ☐ Heat Pump Supply
☐ Irrigation ☐ Public ☐ Heat Pump Recharge
☐ Agricultural ☐ Misc. Public ☐ Closed Loop Heat Pump
☐ Agricultural/Lawn Irrigation
☐ Other (Specify) MONITORING

TYPE OF PERMANENT PUMP INSTALLED: N/A

Pump Manufacturer: _____ Horsepower: _____
Rated Capacity: _____ (GPM) Pump Intake Setting(ft. BGS): _____
Pump Type: ☐ Submersible ☐ Jet ☐ Vertical Turbine Pump
Pump Installed By: _____ ☐ Others Date: _____

Gravel Pack: From: 8 Feet To: 20 Feet
Grout Type: ☐ Bentonite Clay ☑ Cement ☐ Bentonite Clay Plug
Other: _____ From: 0 Feet To: 8 Feet
Type Of Non-Grout Backfill Of Well Annulus: _____
From: _____ Feet To: _____ Feet
Static Water Level: 12 Feet ☑ Below ☐ Above Ground Surface
Pumping Water Level: _____ Feet On (Date): _____
After: _____ Hours Pumping Rate: _____ GPM
Pumping Method /Device: ☐ Airlift ☐ Mechanical (Pump) Other: _____
Was A Geophysical Log Taken? ☐ Yes ☑ No If "Yes", By: _____

WELL HEAD COMPLETION:

Type: ☐ Pitless Adapter ☐ Standard "T"
☐ Well Pit ☐ Pad Mount
☐ Other - Specify: STICK-UP STEEL COVER
Well Head Completed: 24 Inches ☑ Above ☐ Below Ground Surface
Was The Well Tag Attached In Accordance With Current Regulations?
☑ YES ☐ NO If "NO", Please Explain:

Site Plan - **If different from original application, *must*** note changes such as distances from well to house, property lines, nearest road, **and all nearby septic systems and central sewer lines** (included suitable plot plan if available).

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT.

Signature - **Well Driller in Charge of Well Construction**

PAUL J. SUIT #603 12-16-14
Well Driller License # Date

White - DNREC • Canary - Contractor • Pink - Owner

Doc No. 40-08/07/01/10 - CRR 1

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

PHONE: 302-739-9944
FAX: 302-739-7764

STATE OF DELAWARE
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-Authorization Number-

4000705

ILLEGIBLE OR INCOMPLETE FORMS WILL BE RETURNED

PLEASE PRINT OR TYPE - USE BLUE OR BLACK INK ONLY

Permit #: 248847 Local ID: MW-8
Tax Map/Parcel #: 234-21.00-151.03
Property Owner: SUSSEX COUNTY COUNCIL
Water Well Contractor: GEOMATRIX DRILLING WC Lic #: 806
Well Driller In Charge During Construction: PAUL J. SUIT

DRILLING / EXCAVATION METHOD

☑ Auger ☐ Bored ☐ Mud Rotary
☐ Driver ☐ Jetted ☐ Air Rotary
☐ Cable Tool ☐ Washed ☐ Reverse Rotary
☐ Other (Specify): _____

Total Depth Of Excavation (Feet BGS): 20
Construction Date: 12-16-14

CASING INSTALLATION:

	INNER	OUTER (1)	OUTER (2)	OUTER (3)
Casing Top (Inches AGS):	24			
Casing Bottom (Feet BGS):	10			
Casing Diameter (Inches):	2			
Casing Material:	PVC			

Gravel Pack Size (#): 2
AGS=Above Ground Surface BGS=Below Ground Surface

SCREEN INSTALLATION:

Screen Top (Feet BGS): 10
Screen Bottom (Feet BGS): 20
Screen Diameter (Inches): 2
Screen Material: PVC
Screen Slot Size (1000 of an Inch): 0120

WELL USE:

☐ Domestic ☐ Industrial ☐ Heat Pump Supply
☐ Irrigation ☐ Public ☐ Heat Pump Recharge
☐ Agricultural ☐ Misc. Public ☐ Closed Loop Heat Pump
☐ Agricultural/Lawn Irrigation
☑ Other (Specify) MONITORING

TYPE OF PERMANENT PUMP INSTALLED: N/A

Pump Manufacturer: _____ Horsepower: _____
Rated Capacity: _____ (GPM) Pump Intake Setting(ft, BGS): _____
Pump Type: ☐ Submersible ☐ Jet ☐ Vertical Turbine Pump
Pump Installed By: _____ ☐ Others Date: _____

Gravel Pack: From: 8 Feet To: 20 Feet
Grout Type: ☐ Bentonite Clay ☑ Cement ☐ Bentonite Clay Plug
Other: _____ From: 0 Feet To: 8 Feet
Type Of Non-Grout Backfill Of Well Annulus: _____
From: _____ Feet To: _____ Feet
Static Water Level: 12 Feet ☑ Below ☐ Above Ground Surface
Pumping Water Level: _____ Feet On (Date): _____
After: _____ Hours Pumping Rate: _____ GPM
Pumping Method /Device: ☐ Airlift ☐ Mechanical (Pump) Other: _____
Was A Geophysical Log Taken? ☐ Yes ☑ No If "Yes", By: _____

WELL HEAD COMPLETION:

Type: ☐ Pitless Adapter ☐ Standard "T"
☐ Well Pit ☐ Pad Mount
☑ Other - Specify: STICKUP STEEL COVER
Well Head Completed: 24 Inches ☑ Above ☐ Below Ground Surface
Was The Well Tag Attached In Accordance With Current Regulations?
☑ YES ☐ NO If "NO", Please Explain:

Site Plan - **If different from original application, *must*** note changes such as distances from well to house, property lines, nearest road, **and all nearby septic systems and central sewer lines** (included suitable plot plan if available).

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT.

Paul J. Suit
Signature - **Well Driller in Charge of Well Construction**

PAUL J. SUIT # 603 12-16-14
Well Driller License # Date

White - DNREC • Canary - Contractor • Pink - Owner

Doc No. 40-08/07/01/10 - CRR 1

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DOVER, DELAWARE 19901

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STATE OF DELAWARE
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-Authorization Number-

40007898

ILLEGIBLE OR INCOMPLETE FORMS WILL BE RETURNED

PLEASE PRINT OR TYPE - USE BLUE OR BLACK INK ONLY

Permit #: 248852 Local ID: MW-9
Tax Map/Parcel #: 234-21.00-151.06
Property Owner: SUSSEX COUNTY COUNCIL
Water Well Contractor: GEOMATRIX DRILLING WC Lic #: 806
Well Driller in Charge during Construction: PAUL J. SUIT

WELL CONSTRUCTION METHOD

- ✓ Augered
- o Bored
- o Cable Tool
- o Driven
- o Jetted
- o Air Rotary
- o Mud Rotary
- o Reverse
- o Washed
- o Other (Specify):

Total Depth of Excavation: 14
Construction Date: 12-10-14

CASING INSTALLATION:

	INNER CASING	OUTER CASING (1)	(2)	(3)
CASING TOP:	AGS 24"			
CASING BOTTOM:	BCS 8			
CASING DIAMETER:	2			
CASING MATERIAL:	PVC			

SCREEN INSTALLATION

SCREEN TOP: 8
SCREEN BOTTOM: 14
SCREEN DIAMETER: 2
SCREEN MATERIAL: PVC
SCREEN SLOT SIZE: 0.20 /THOUSANDS
GRAVEL PACK SIZE: #2

Gravel Pack From: 6 ft. To: 14 ft.
Grout Type: ✓ Cement o Bentonite Clay
o Other: From: 0 ft. To: 8 ft.
Type of Non-Grout backfill of Well Annulus:
From: To:
Static Water Level: 12 ft. o Below OR o Above Ground Surface
On (date):
Pumping Water Level: ft. On (date):
After: hrs. Pumping at: GPM
Was a Geophysical Log Taken? o YES ✓ NO

WELL HEAD COMPLETION:

Type:
- o Pitless Adapter
- o Standard "T"
- o Well Pit
- o Pad Mount
- o Other - Specify: STICK UP STEEL COVER

Well Head Completed: 24 inches ✓ Above (OR) o Below Ground Surface
Was the Well Tag attached in accordance with current regulations?
✓ YES o NO If "NO", Please Explain:

Site Plan – Include lot size and dimensions, distances from well to house, property lines, nearest road, and all nearby septic systems (include suitable plot plan if available). **(If different from original application)**

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT.

Signature - Well Driller in Charge of Well Construction

PAUL J SUIT #603 12-16-14
License # Date

White - DNREC • Canary - Contractor • Pink - Owner

Doc No. 40-08/78/01/03 - EC 7

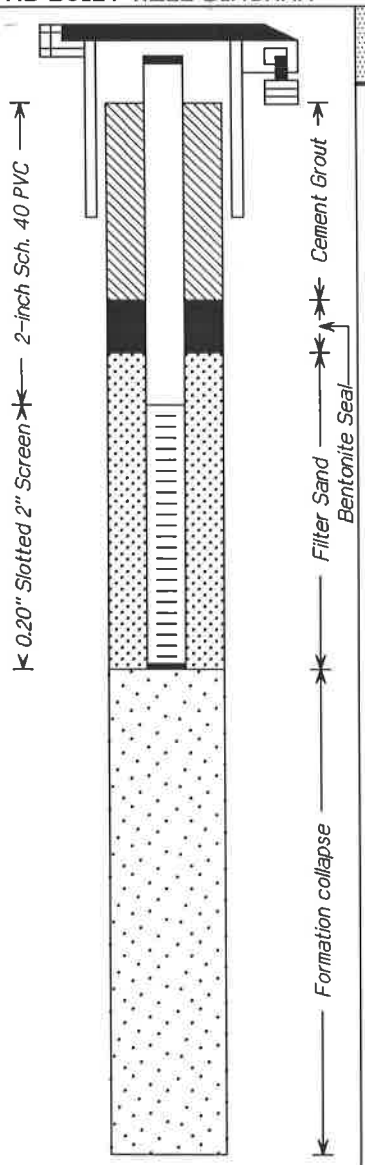
WELL CONSTRUCTION LOG

Client Whitman, Requardt & Associates, LLP. Well # MW-1
Project Name Sussex County RIB. Job # W.O.# 14256
Location Milsboro Delaware.

Datum ____ Driller Paul Suit Drilling Method HSA Well Diameter 2" In.
Surf. Elev. FT Inspector ____ Casing Diameter 2" In. Hole Diameter 8" In.
Date Started 12/11/2014 Date Completed 12/11/2014 Mud Type N/A Rock Core Dia. NA

AS BUILT WELL DIAGRAM

STRATA DEPTH	SOIL DESCRIPTION Color, Moisture, Density, Size, Lithology	ELEV	SOIL SYMBOL	DEPTH SCALE
0.0				
0.5	6" **ORGANIC PEAT.**			
	Brown to gray, moist to wet, very loose to loose to very loose, fine to medium, **SAND, WITH TRACE OF CLAY.**			
14.0				
	Gray, wet, loose, medium to coarse, **SAND.**			
18.0				
	Yellowish tan, wet, loose to very loose to medium dense, fine to medium, **SAND, WITH TRACE OF CLAY.**			
30.0				
32.0	Yellowish tan, wet, loose, medium to coarse, **SAND, WITH TRACE OF GRAVEL.**			
	Yellowish tan, wet, loose to medium dense, fine to medium, **SAND, WITH TRACE OF GRAVEL.**			
38.0				
40.0	Yellowish tan, wet, loose, fine to medium, **SAND, WITH A LITTLE CLAY.**			
	Bottom of test boring 40.0 feet.			



COMMENTS

WELL DETAILS

WELL TIP DEPTH 21.5 FT
TOP OF RISER 0.0 FT
SCREEN LENGTH 10.0 FT
RISER LENGTH 11.5 FT
TYPE OF WELL COVER Stick up.
LOCK NUMBER 10L320

SAND/GRAVEL FILTER PACK: FROM 9.5 TO 21.5 FT
BENTONITE SEAL: FROM 7.5 TO 9.5 FT
WELL PERMIT NO DE-248848

DRILLING METHOD

HSA - HOLLOW STEM AUGERS
DC - DRIVING CASING
MR - MUD ROTARY
AR - AIR ROTARY/AIR HAMMER
CT - CABLE TOOL
WR -WET ROTARY

Geometrix Drilling Inc.
410-242-9220
Baltimore MD.

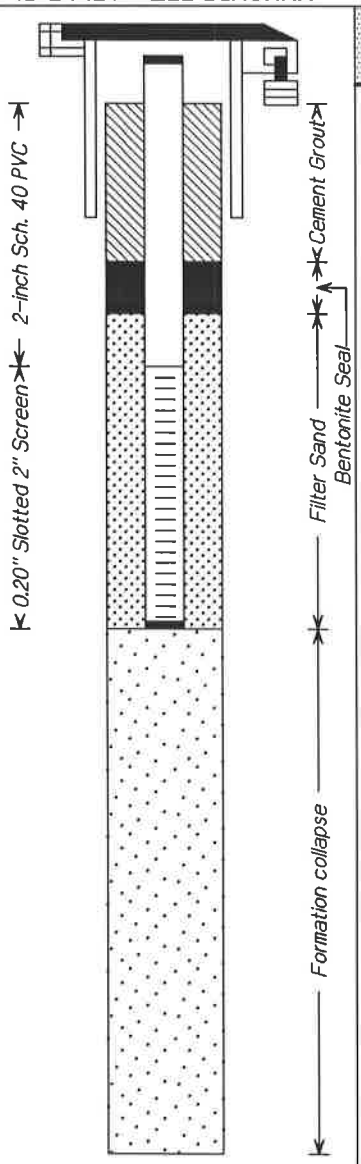
WELL CONSTRUCTION LOG

Client Whitman, Requardt & Associates, LLP. Well # MW-2
Project Name Sussex County RIB. Job # W.O.# 14256
Location Milsboro Delaware.

Datum ____ Driller Paul Suit Drilling Method HSA Well Diameter 2" In.
Surf. Elev. FT Inspector ____ Casing Diameter 2" In. Hole Diameter 8" In.
Date Started 12/11/2014 Date Completed 12/11/2014 Mud Type N/A Rock Core Dia. NA

STRATA DEPTH	SOIL DESCRIPTION Color, Moisture, Density, Size, Lithology	ELEV	SOIL SYMBOL	DEPTH SCALE
0.0				
0.5	6" **ORGANIC PEAT.**			
2.0	Brown, dry, loose, medium, **SAND.**			
4.0	Brown, moist, loose, medium, **SAND, WITH A LITTLE CLAY.**			
	Brown to gray, moist, loose, medium, **SAND.**			
10.0				
	Gray, wet, loose to very loose to medium dense, fine to coarse, **SAND.**			
40.0				
	Bottom of test boring 40.0 feet.			

AS BUILT WELL DIAGRAM



COMMENTS

WELL DETAILS

WELL TIP DEPTH 20.0 FT
TOP OF RISER 0.0 FT
SCREEN LENGTH 10.0 FT
RISER LENGTH 10.0 FT
TYPE OF WELL COVER Stick up.
LOCK NUMBER 10L320

SAND/GRAVEL FILTER PACK: FROM 8.0 TO 20.0 FT
BENTONITE SEAL: FROM 6.0 TO 8.0 FT
WELL PERMIT NO DE-248849

DRILLING METHOD

HSA - HOLLOW STEM AUGERS
DC - DRIVING CASING
MR - MUD ROTARY
AR - AIR ROTARY/AIR HAMMER
CT - CABLE TOOL
WR -WET ROTARY

Geomatrix Drilling Inc.
410-242-9220
Baltimore MD.

WELL CONSTRUCTION LOG

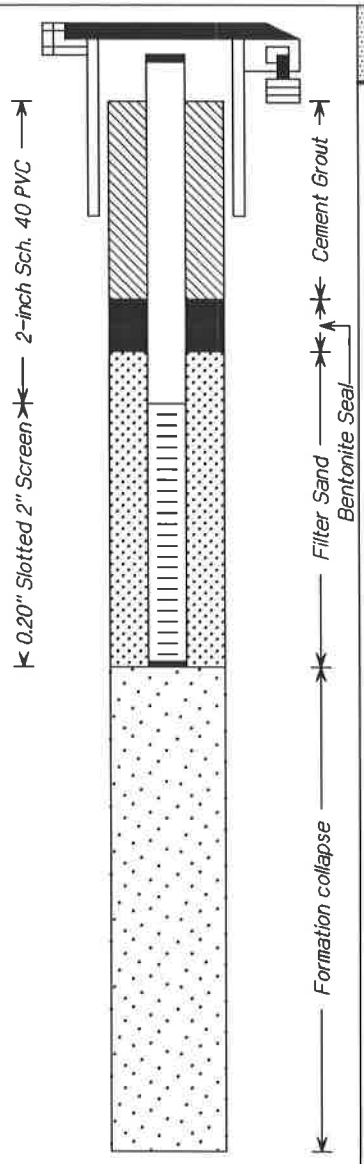
Client Whitman, Requardt & Associates, LLP. Well # MW-3
Project Name Sussex County RIB. Job # W.O.# 14256
Location Milsboro Delaware.

Datum ____ Driller Paul Suit Drilling Method HSA Well Diameter 2" In.
Surf. Elev. FT Inspector ____ Casing Diameter 2" In. Hole Diameter 8" In.
Date Started 12/11/2014 Date Completed 12/11/2014 Mud Type N/A Rock Core Dia. NA

STRATA DEPTH	SOIL DESCRIPTION Color, Moisture, Density, Size, Lithology	ELEV
0.0		
0.5	6" **ORGANIC PEAT.**	
2.0	Brown, moist, loose, fine to medium, **SAND.**	
6.0	Brown, moist, loose, fine to medium, **SAND, WITH A LITTLE TO A TRACE OF CLAY.**	
8.0	Yellow, damp, loose, fine to medium, **SAND, WITH TRACE OF GRAVEL.**	
	Orangish brown, moist to wet, loose to medium dense, fine to medium, **SAND.**	
16.0		
	Grayish white, wet, loose, medium, **SAND.**	
22.0		
24.0	Gray, wet, medium dense, medium, **SAND, WITH TRACE OF CLAY & GRAVEL.**	
	Gray, wet, medium dense to loose to medium dense, medium to coarse, **SAND.**	
36.0		
	Gray, wet, loose, fine to medium, **SAND, WITH TRACE OF CLAY.**	
40.0		
	Bottom of test boring 40.0 feet.	

SOIL SYMBOL | DEPTH SCALE: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50

AS BUILT WELL DIAGRAM



COMMENTS

WELL DETAILS

WELL TIP DEPTH 21.5 FT
TOP OF RISER 0.0 FT
SCREEN LENGTH 10.0 FT
RISER LENGTH 11.5 FT
TYPE OF WELL COVER Stick up.
LOCK NUMBER 10L320

SAND/GRAVEL FILTER PACK: FROM 9.5 TO 21.5 FT
BENTONITE SEAL: FROM 7.5 TO 9.5 FT
WELL PERMIT NO DE-248850

DRILLING METHOD

HSA - HOLLOW STEM AUGERS
DC - DRIVING CASING
MR - MUD ROTARY
AR - AIR ROTARY/AIR HAMMER
CT - CABLE TOOL
WR -WET ROTARY

Geometrix Drilling Inc.
410-242-9220
Baltimore MD.

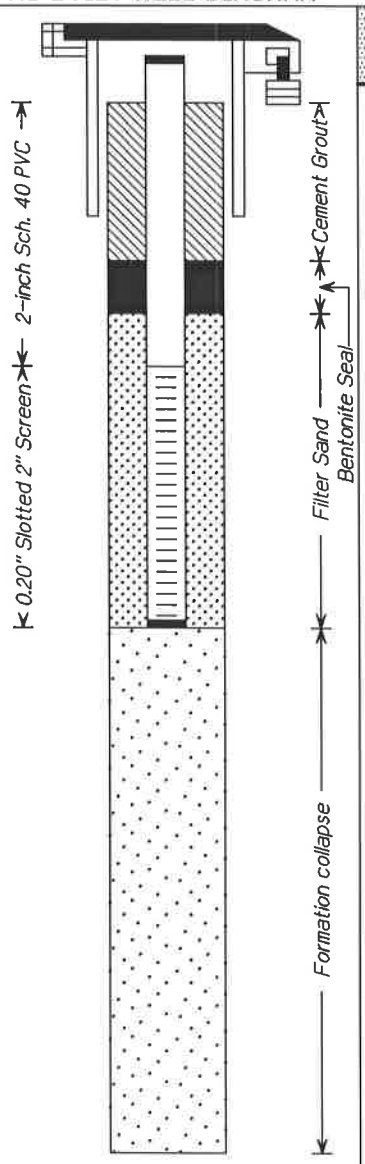
WELL CONSTRUCTION LOG

Client Whitman, Requardt & Associates, LLP. Well # MW-7
Project Name Sussex County RIB. Job # W.O.# 14256
Location Milsboro Delaware.

Datum ____ Driller Paul Suit Drilling Method HSA Well Diameter 2" In.
Surf. Elev. FT Inspector ____ Casing Diameter 2" In. Hole Diameter 8" In.
Date Started 12/08/2014 Date Completed 12/08/2014 Mud Type N/A Rock Core Dia. NA

STRATA DEPTH	SOIL DESCRIPTION Color, Moisture, Density, Size, Lithology	ELEV	SOIL SYMBOL	DEPTH SCALE
00.0				
0.5	6" **ORGANIC PEAT.**			
	Brown, dry, loose, medium, **SAND.**			
4.0				
	Grayish tan, moist, loose, medium, **SAND, WITH TRACE OF CLAY.**			
10.0				
	Gray, moist to wet, loose, fine to medium, **SAND.**			
32.0				
	Gray, wet, medium dense to loose to medium dense, fine to coarse, **SAND.**			
40.0				
	Bottom of test boring 40.0 feet.			

AS BUILT WELL DIAGRAM



COMMENTS

WELL DETAILS

WELL TIP DEPTH 20.0 FT
TOP OF RISER 0.0 FT
SCREEN LENGTH 10.0 FT
RISER LENGTH 10.0 FT
TYPE OF WELL COVER Stick up.
LOCK NUMBER 10L320

SAND/GRAVEL FILTER PACK: FROM 8.0 TO 20.0 FT
BENTONITE SEAL: FROM 6.0 TO 8.0 FT
WELL PERMIT NO DE-248851

DRILLING METHOD

HSA - HOLLOW STEM AUGERS
DC - DRIVING CASING
MR - MUD ROTARY
AR - AIR ROTARY/AIR HAMMER
CT - CABLE TOOL
WR -WET ROTARY

Geometrix Drilling Inc.
410-242-9220
Baltimore MD.

WELL CONSTRUCTION LOG

Client Whitman, Requardt & Associates, LLP. Well # MW-8
Project Name Sussex County RIB. Job # W.O.# 14256
Location Milsboro Delaware.

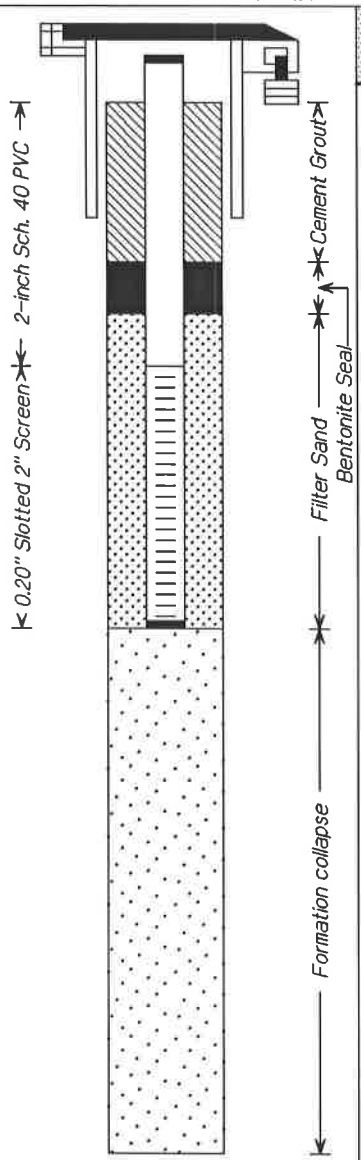
Datum ____ Driller Paul Suit Drilling Method HSA Well Diameter 2" In.
Surf. Elev. FT Inspector ____ Casing Diameter 2" In. Hole Diameter 8" In.
Date Started 12/10/2014 Date Completed 12/10/2014 Mud Type N/A Rock Core Dia. NA

STRATA DEPTH	SOIL DESCRIPTION Color, Moisture, Density, Size, Lithology	ELEV
00.0		
0.5	6" **ORGANIC PEAT.**	
4.0	Brown, moist, loose, medium, **SAND, WITH TRACE OF CLAY.**	
8.0	Tan, dry, medium dense, medium, **SAND.**	
28.0	Grayish tan to gray, moist to wet, medium dense to loose, medium, **SAND, WITH TRACE OF CLAY.**	
34.0	Gray, wet, very loose to loose, fine to medium, **SAND.**	
40.0	Gray, wet, medium dense, medium to coarse, **SAND.**	
	Bottom of test boring 40.0 feet.	

SOIL SYMBOL

DEPTH SCALE: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50

AS BUILT WELL DIAGRAM



COMMENTS

WELL DETAILS

WELL TIP DEPTH 20.0 FT
TOP OF RISER 0.0 FT
SCREEN LENGTH 10.0 FT
RISER LENGTH 10.0 FT
TYPE OF WELL COVER Stick up.
LOCK NUMBER 10L320

SAND/GRAVEL FILTER PACK: FROM 8.0 TO 20.0 FT
BENTONITE SEAL: FROM 6.0 TO 8.0 FT
WELL PERMIT NO DE-248847

DRILLING METHOD

HSA - HOLLOW STEM AUGERS
DC - DRIVING CASING
MR - MUD ROTARY
AR - AIR ROTARY/AIR HAMMER
CT - CABLE TOOL
WR -WET ROTARY

Geometrix Drilling Inc.
410-242-9220
Baltimore MD.

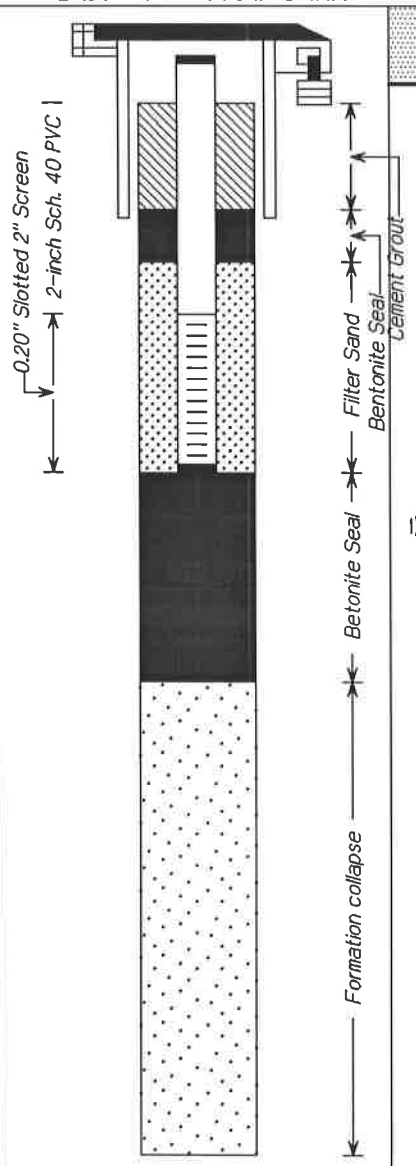
WELL CONSTRUCTION LOG

Client Whitman, Requardt & Associates, LLP. Well # MW-9
Project Name Sussex County RIB. Job # W.O.# 14256
Location Milsboro Delaware.

Datum ____ Driller Paul Suit Drilling Method HSA Well Diameter 2" In.
Surf. Elev. FT Inspector ____ Casing Diameter 2" In. Hole Diameter 8" In.
Date Started 12/10/2014 Date Completed 12/10/2014 Mud Type N/A Rock Core Dia. NA

STRATA DEPTH	SOIL DESCRIPTION Color, Moisture, Density, Size, Lithology	ELEV	SOIL SYMBOL	DEPTH SCALE
00.0				
0.5	6" **ORGANIC PEAT.**			
	Tan, dry to damp, very loose to loose, medium, **SAND.**			5
8.0				
	Grayish white, moist to wet, medium dense, medium, **SAND, WITH TRACE OF CLAY.**			10
14.0				
	Orangish brown to gray, wet, stiff to soft, **CLAY.**			15
22.0				20
24.0	Orangish brown, wet, loose, medium, **SAND, WITH CLAY LENSES.**			25
	Grayish tan, wet, very loose to loose, fine to medium, **SAND.**			30
36.0				35
	Grayish tan, wet, very loose to medium dense, fine to coarse, **SAND, WITH TRACE OF GRAVEL.**			40
40.0				
	Bottom of test boring 40.0 feet.			45
				50

AS BUILT WELL DIAGRAM



COMMENTS

1) Clay layer sealed from 14.0 to 22.0 feet with betonite pellets.

WELL DETAILS

WELL TIP DEPTH 14.0 FT
TOP OF RISER 0.0 FT
SCREEN LENGTH 6.0 FT
RISER LENGTH 8.0 FT
TYPE OF WELL COVER Stick up.
LOCK NUMBER 10L320

SAND/GRAVEL FILTER PACK: FROM 6.0 TO 14.0 FT
BENTONITE SEAL: FROM 4.0 TO 6.0 FT
WELL PERMIT NO DE-248852

DRILLING METHOD

HSA - HOLLOW STEM AUGERS
DC - DRIVING CASING
MR - MUD ROTARY
AR - AIR ROTARY/AIR HAMMER
CT - CABLE TOOL
WR -WET ROTARY

Geometrix Drilling Inc.
410-242-9220
Baltimore MD.

SOIL BORING LOG

Client Whitman, Requardt & Associates, LLP. Boring # MW-1
Project Name Sussex County RIB. Job # W.O.# 14256
Location Milsboro Delaware.

Datum ____ Driller Paul Suit Hammer Type Safety,140 LBS. Boring Method HSA
Surf. Elev. Ft. Inspector ____ Sampler Type SPT Borehole Diameter 8" In.
Date Started 12/11/2014 Date Completed 12/11/2014 Rig Type Mobil B-47 Rock Core Size NA

STRATA DEPTH	SOIL DESCRIPTION Color, Moisture, Density, Size, Lithology	ELEV	SOIL SYMBOL	SAMPLE DEPTH	SAMPLE No.	Type	Blows/6"	Rec.	PID (ppm)	BORING & SAMPLING NOTES
0.0										
0.5	6" **ORGANIC PEAT.**				1	SPT	1-1-1-1	20"		
	Brown to gray, moist to wet, very loose to loose to very loose, fine to medium, **SAND, WITH TRACE OF CLAY.**				2	SPT	1-1-1-1	12"		
				5	3	SPT	2-1-2-1	20"		
					4	SPT	3-3-3-3	20"		
					5	SPT	3-1-3-3	22"		
				10	6	SPT	1-1-1-1	18"		1) Encountered water at 14.0 feet.
14.0					7	SPT	1-2-2-4	20"		
	Gray, wet, loose, medium to coarse, **SAND.**			15	8	SPT	8-5-4-5	22"		
18.0					9	SPT	3-2-5-6	24"		
	Yellowish tan, wet, loose to very loose to medium dense, fine to medium, **SAND, WITH TRACE OF CLAY.**			20	10	SPT	2-5-3-3	24"		2) 2" monitoring well installed to 21.5 feet.
					11	SPT	2-1-1-2	24"		
					12	SPT	1-1-2-3	24"		
				25	13	SPT	1-2-2-4	24"		
					14	SPT	3-5-6-7	24"		
30.0					15	SPT	4-6-7-7	24"		
				30	16	SPT	1-4-5-7	24"		
32.0	Yellowish tan, wet, loose, medium to coarse, **SAND, WITH TRACE OF GRAVEL.**				17	SPT	6-3-3-6	24"		
	Yellowish tan, wet, loose to medium dense, fine to medium, **SAND, WITH TRACE OF GRAVEL.**			35	18	SPT	4-5-7-9	24"		
38.0					19	SPT	4-5-6-6	24"		
40.0	Yellowish tan, wet, loose, fine to medium, **SAND, WITH A LITTLE CLAY.**			40	20	SPT	5-4-6-8	24"		
	Bottom of test boring 40.0 feet.									
				45						
				50						

BORING METHOD
HSA - HOLLOW STEM AUGERS
HA/TR-HAND AUGER & TRIPOD
DC - DRIVING CASING
MD - MUD DRILLING
AR - AIR ROTARY/AIR HAMMER

SAMPLER TYPE
SPT - STANDARD PENETRATION TEST SPLIT SPOON
ST - SHELBY TUBE
AS - AUGER SAMPLE
RC - ROCK CORE

GROUNDWATER DEPTH
AT COMPLETION N/A FT.
AFTER ____ HRS. ____ FT.
AFTER 24 HRS. N/A FT.
CAVED AT N/A FT.

Geometrix Drilling Inc.
410-242-9220
Baltimore MD.

SPT-Standard Penetration Test: Driving 2 Inch OD Sampler 1.0 foot with 140 pound Hammer Falling 30 inches; Blow Count Recorded at 6 inch Intervals
PID - PhotoIonization Detector (parts per million)

SOIL BORING LOG

Client Whitman, Requardt & Associates, LLP. Boring # MW-2
Project Name Sussex County RIB. Job # W.O.# 14256
Location Milsboro Delaware.

Datum _____ Driller Paul Suit Hammer Type Safety,140 LBS. Boring Method HSA
Surf. Elev. Ft. Inspector _____ Sampler Type SPT Borehole Diameter 8" In.
Date Started 12/11/2014 Date Completed 12/11/2014 Rig Type Mobil B-47 Rock Core Size NA

STRATA DEPTH	SOIL DESCRIPTION Color, Moisture, Density, Size, Lithology	ELEV	SOIL SYMBOL	SAMPLE DEPTH	SAMPLE No.	Type	Blows/6"	Rec.	PID (ppm)	BORING & SAMPLING NOTES
00.0										
0.5	6" **ORGANIC PEAT.**				1	SPT	2-2-2-3	20"		
2.0	Brown, dry, loose, medium, **SAND.**				2	SPT	4-3-4-3	12"		
4.0	Brown, moist, loose, medium, **SAND, WITH A LITTLE CLAY.**			5	3	SPT	2-2-2-2	20"		
	Brown to gray, moist, loose, medium, **SAND.**				4	SPT	3-3-2-4	20"		
10.0					5	SPT	5-4-2-3	20"		
	Gray, wet, loose to very loose to medium dense, fine to coarse, **SAND.**			10	6	SPT	2-3-2-2	18"		1) Encountered water at 12.0 feet.
					7	SPT	1-1-2-2	16"		
				15	8	SPT	1-1-3-5	24"		
					9	SPT	5-7-9-10	24"		
				20	10	SPT	12-9-12-13	24"		2) 2" monitoring well installed to 20.0 feet.
					11	SPT	3-5-6-6	24"		
					12	SPT	6-3-4-6	24"		
				25	13	SPT	3-3-3-4	24"		
					14	SPT	5-6-7-9	24"		
				30	15	SPT	3-4-4-4	24"		
					16	SPT	6-7-9-10	24"		
					17	SPT	10-6-10-11	24"		
				35	18	SPT	12-10-9-10	24"		
					19	SPT	10-9-10-11	24"		
40.0				40	20	SPT	6-8-10-11	24"		
	Bottom of test boring 40.0 feet.									
				45						
				50						

BORING METHOD
HSA - HOLLOW STEM AUGERS
HA/TR-HAND AUGER & TRIPOD
DC - DRIVING CASING
MD - MUD DRILLING
AR - AIR ROTARY/AIR HAMMER

SAMPLER TYPE
SPT - STANDARD PENETRATION TEST SPLIT SPOON
ST - SHELBY TUBE
AS - AUGER SAMPLE
RC - ROCK CORE

GROUNDWATER DEPTH
AT COMPLETION N/A FT.
AFTER ____ HRS. ____ FT.
AFTER 24 HRS. N/A FT.
CAVED AT N/A FT.

Geometrix Drilling Inc.
410-242-9220
Baltimore MD.

SPT-Standard Penetration Test: Driving 2 Inch OD Sampler 1.0 foot with 140 pound Hammer Falling 30 inches; Blow Count Recorded at 6 inch Intervals
PID - PhotoIonization Detector (parts per million)

SOIL BORING LOG

Client Whitman, Requardt & Associates, LLP. Boring # MW-3
Project Name Sussex County RIB. Job # W.O.# 14256
Location Milsboro Delaware.

Datum ____ Driller Paul Suit Hammer Type Safety,140 LBS. Boring Method HSA
Surf. Elev. Ft. Inspector ____ Sampler Type SPT Borehole Diameter 8" In.
Date Started 12/11/2014 Date Completed 12/11/2014 Rig Type Mobil B-47 Rock Core Size NA

STRATA DEPTH	SOIL DESCRIPTION Color, Moisture, Density, Size, Lithology	ELEV	SOIL SYMBOL	SAMPLE DEPTH	SAMPLE No.	Type	Blows/6"	Rec.	PID (ppm)	BORING & SAMPLING NOTES
0.0										
0.5	6" **ORGANIC PEAT.**				1	SPT	2-2-2-3	20"		
2.0	Brown, moist, loose, fine to medium, **SAND.**				2	SPT	3-4-4-4	16"		
	Brown, moist, loose, fine to medium, **SAND, WITH A LITTLE TO A TRACE OF CLAY.**			5	3	SPT	3-2-2-3	24"		
6.0					4	SPT	5-3-3-4	20"		
8.0	Yellow, damp, loose, fine to medium, **SAND, WITH TRACE OF GRAVEL.**			10	5	SPT	4-3-4-4	18"		
					6	SPT	3-3-4-4	20"		1) Encountered water at 13.0 feet.
	Orangish brown, moist to wet, loose to medium dense, fine to medium, **SAND.**				7	SPT	3-4-4-4	20"		
				15	8	SPT	3-5-7-7	20"		
16.0					9	SPT	4-4-4-5	24"		
	Grayish white, wet, loose, medium, **SAND.**				10	SPT	3-5-5-5	24"		2) 2" monitoring well installed to 21.5 feet.
				20	11	SPT	2-2-2-3	24"		
22.0					12	SPT	2-6-8-12	24"		
24.0	Gray, wet, medium dense, medium, **SAND, WITH TRACE OF CLAY & GRAVEL.**			25	13	SPT	4-4-7-9	24"		
	Gray, wet, medium dense to loose to medium dense, medium to coarse, **SAND.**				14	SPT	6-4-4-5	24"		
					15	SPT	6-5-5-6	24"		
				30	16	SPT	6-2-3-6	24"		
					17	SPT	2-2-5-8	24"		
36.0				35	18	SPT	5-5-8-9	24"		
	Gray, wet, loose, fine to medium, **SAND, WITH TRACE OF CLAY.**				19	SPT	4-5-5-4	24"		
40.0				40	20	SPT	3-4-6-7	24"		
	Bottom of test boring 40.0 feet.									
				45						
				50						

BORING METHOD
HSA - HOLLOW STEM AUGERS
HA/TR-HAND AUGER & TRIPOD
DC - DRIVING CASING
MD - MUD DRILLING
AR - AIR ROTARY/AIR HAMMER

SAMPLER TYPE
SPT - STANDARD PENETRATION TEST SPLIT SPOON
ST - SHELBY TUBE
AS - AUGER SAMPLE
RC - ROCK CORE

GROUNDWATER DEPTH
AT COMPLETION N/A FT.
AFTER ____ HRS. ____ FT.
AFTER 24 HRS. N/A FT.
CAVED AT N/A FT.

Geometrix Drilling Inc.
410-242-9220
Baltimore MD

SPT-Standard Penetration Test: Driving 2 Inch OD Sampler 1.0 foot with 140 pound Hammer Falling 30 inches; Blow Count Recorded at 6 inch Intervals
PID - PhotoIonization Detector (parts per million)

SOIL BORING LOG

Client Whitman, Requardt & Associates, LLP. Boring # MW-7
Project Name Sussex County RIB. Job # W.O.# 14256
Location Milsboro Delaware.

Datum _____ Driller Paul Suit Hammer Type Safety,140 LBS. Boring Method HSA
Surf. Elev. Ft. Inspector _____ Sampler Type SPT Borehole Diameter 8" In.
Date Started 12/08/2014 Date Completed 12/08/2014 Rig Type Mobil B-47 Rock Core Size NA

STRATA DEPTH	SOIL DESCRIPTION Color, Moisture, Density, Size, Lithology	ELEV	SOIL SYMBOL	SAMPLE DEPTH	SAMPLE No.	Type	Blows/6"	Rec.	PID (ppm)	BORING & SAMPLING NOTES
00.0										
0.5	6" **ORGANIC PEAT.**				1	SPT	1/12"-1-1	3"		
	Brown, dry, loose, medium, **SAND.**				2	SPT	2-2-2-2	18"		
4.0				5	3	SPT	2-2-3-3	24"		
	Grayish tan, moist, loose, medium, **SAND, WITH TRACE OF CLAY.**				4	SPT	4-5-5-7	18"		
					5	SPT	5-5-3-3	24"		
10.0				10	6	SPT	3-3-3-3	24"		1) Encountered water at 12.0 feet.
	Gray, moist to wet, loose, fine to medium, **SAND.**				7	SPT	2-2-2-2	24"		
				15	8	SPT	1-1-2-4	24"		2) 2" monitoring well installed to 20.0 feet.
					9	SPT	1-2-2-3	24"		
				20	10	SPT	2-2-3-3	24"		
					11	SPT	1-1-2-3	24"		
					12	SPT	2-4-4-5	20"		
				25	13	SPT	2-4-6-8	24"		
					14	SPT	3-4-3-4	24"		
				30	15	SPT	1-3-3-5	24"		
32.0					16	SPT	3-3-3-4	24"		
	Gray, wet, medium dense to loose to medium dense, fine to coarse, **SAND.**				17	SPT	3-5-7-7	24"		
				35	18	SPT	3-4-4-6	20"		
					19	SPT	3-5-8-8	24"		
40.0					20	SPT	7-8-8-10	24"		
	Bottom of test boring 40.0 feet.			40						
				45						
				50						

BORING METHOD
HSA - HOLLOW STEM AUGERS
HA/TR-HAND AUGER & TRIPOD
DC - DRIVING CASING
MD - MUD DRILLING
AR - AIR ROTARY/AIR HAMMER

SAMPLER TYPE
SPT - STANDARD PENETRATION TEST SPLIT SPOON
ST - SHELBY TUBE
AS - AUGER SAMPLE
RC - ROCK CORE

GROUNDWATER DEPTH
AT COMPLETION N/A FT.
AFTER _____ HRS. _____ FT.
AFTER 24 HRS. N/A FT.
CAVED AT N/A FT.

Geometrix Drilling Inc.
410-242-9220
Baltimore MD.

SPT-Standard Penetration Test: Driving 2 Inch OD Sampler 1.0 foot with 140 pound Hammer Falling 30 inches; Blow Count Recorded at 6 inch Intervals
PID - PhotoIonization Detector (parts per million)

SOIL BORING LOG

Client Whitman, Requardt & Associates, LLP. Boring # MW-8
Project Name Sussex County RIB. Job # W.O.# 14256
Location Milsboro Delaware.

Datum ____ Driller Paul Suit Hammer Type Safety,140 LBS. Boring Method HSA
Surf. Elev. Ft. Inspector ____ Sampler Type SPT Borehole Diameter 8" In.
Date Started 12/10/2014 Date Completed 12/10/2014 Rig Type Mobil B-47 Rock Core Size NA

STRATA DEPTH	SOIL DESCRIPTION Color, Moisture, Density, Size, Lithology	ELEV	SOIL SYMBOL	SAMPLE DEPTH	SAMPLE No.	Type	Blows/6"	Rec.	PID (ppm)	BORING & SAMPLING NOTES
00.0										
0.5	6" **ORGANIC PEAT.**									
	Brown, moist, loose, medium, **SAND, WITH TRACE OF CLAY.**				1	SPT	1-2-3-1	14"		
4.0					2	SPT	2-1-2-3	18"		
	Tan, dry, medium dense, medium, **SAND.**			5	3	SPT	3-5-5-5	20"		
8.0					4	SPT	6-5-6-7	20"		
	Grayish tan to gray, moist to wet, medium dense to loose, medium, **SAND, WITH TRACE OF CLAY.**			10	5	SPT	6-6-5-6	20"		
					6	SPT	4-6-6-7	20"		1) Encountered water at 12.0 feet.
					7	SPT	3-6-7-7	18"		
				15	8	SPT	2-2-3-4	23"		2) 2" monitoring well installed to 20.0 feet.
					9	SPT	3-5-5-8	24"		
				20	10	SPT	3-3-6-6	24"		
					11	SPT	3-3-3-3	24"		
					12	SPT	4-2-2-3	24"		
				25	13	SPT	4-4-5-6	24"		
28.0					14	SPT	3-3-3-4	24"		
	Gray, wet, very loose to loose, fine to medium, **SAND.**				15	SPT	1-1-2-6	24"		
				30	16	SPT	1-1-2-2	24"		
34.0					17	SPT	3-2-4-4	24"		
	Gray, wet, medium dense, medium to coarse, **SAND.**			35	18	SPT	4-7-8-8	18"		
					19	SPT	10-13-14-17	24"		
40.0				40	20	SPT	7-10-13-15	24"		
	Bottom of test boring 40.0 feet.									
				45						
				50						

BORING METHOD
HSA - HOLLOW STEM AUGERS
HA/TR-HAND AUGER & TRIPOD
DC - DRIVING CASING
MD - MUD DRILLING
AR - AIR ROTARY/AIR HAMMER

SAMPLER TYPE
SPT - STANDARD PENETRATION TEST SPLIT SPOON
ST - SHELBY TUBE
AS - AUGER SAMPLE
RC - ROCK CORE

GROUNDWATER DEPTH
AT COMPLETION N/A FT.
AFTER ____ HRS. ____ FT.
AFTER 24 HRS. N/A FT.
CAVED AT N/A FT.

Geometrix Drilling Inc.
410-242-9220
Baltimore MD.

SPT-Standard Penetration Test: Driving 2 Inch OD Sampler 1.0 foot with 140 pound Hammer Falling 30 inches; Blow Count Recorded at 6 inch Intervals
PID - PhotoIonization Detector (parts per million)

SOIL BORING LOG

Client: **Whitman, Requardt & Associates, LLP.** Boring #: MW-9
Project Name: Sussex County RIB. Job #: W.O.# 14256
Location: Milsboro Delaware.

Datum: _____ Driller: Paul Suit Hammer Type: Safety,140 LBS. Boring Method: HSA
Surf. Elev.: Ft. Inspector: _____ Sampler Type: SPT Borehole Diameter: 8" In.
Date Started: 12/10/2014 Date Completed: 12/10/2014 Rig Type: Mobil B-47 Rock Core Size: NA

STRATA DEPTH	SOIL DESCRIPTION Color, Moisture, Density, Size, Lithology	ELEV	SOIL SYMBOL	SAMPLE DEPTH	SAMPLE No.	Type	Blows/6"	Rec.	PID (ppm)	BORING & SAMPLING NOTES
00.0										
0.5	6" **ORGANIC PEAT.**									
	Tan, dry to damp, very loose to loose, medium, **SAND.**				1	SPT	1-1-1-1	16"		1) Encountered water at 12.0 feet.
					2	SPT	2-2-3-2	12"		
				5	3	SPT	2-2-3-3	18"		
					4	SPT	4-4-5-6	16"		
8.0										
	Grayish white, moist to wet, medium dense, medium, **SAND, WITH TRACE OF CLAY.**			10	5	SPT	7-7-6-7	18"		
					6	SPT	4-7-7-8	16"		2) 2" monitoring well installed to 14.0 feet.
					7	SPT	6-8-5-7	16"		
14.0										
	Orangish brown to gray, wet, stiff to soft, **CLAY.**			15	8	SPT	3-2-2-2	18"		
					9	SPT	2-2-3-2	24"		
					10	SPT	2-1-2-2	20"		3) Clay layer sealed from 14.0 to 22.0 feet, with betonite pellets after formation collapse, then well was installed.
				20	11	SPT	2-3-2-2	24"		
22.0										
24.0	Orangish brown, wet, loose, medium, **SAND, WITH CLAY LENSES.**				12	SPT	2-2-3-2	24"		
	Grayish tan, wet, very loose to loose, fine to medium, **SAND.**			25	13	SPT	1-1-1-1	24"		
					14	SPT	1-2-2-3	20"		
					15	SPT	1-2-2-3	6"		
				30	16	SPT	2-2-3-4	24"		
					17	SPT	5-2-2-2	24"		
				35	18	SPT	6-3-3-4	24"		
36.0										
	Grayish tan, wet, very loose to medium dense, fine to coarse, **SAND, WITH TRACE OF GRAVEL.**				19	SPT	2-1-1-4	24"		
40.0				40	20	SPT	5-8-7-8	24"		
	Bottom of test boring 40.0 feet.									
				45						
				50						

BORING METHOD
HSA - HOLLOW STEM AUGERS
HA/TR-HAND AUGER & TRIPOD
DC - DRIVING CASING
MD - MUD DRILLING
AR - AIR ROTARY/AIR HAMMER

SAMPLER TYPE
SPT - STANDARD PENETRATION TEST SPLIT SPOON
ST - SHELBY TUBE
AS - AUGER SAMPLE
RC - ROCK CORE

GROUNDWATER DEPTH
AT COMPLETION N/A FT.
AFTER _____ HRS. _____ FT.
AFTER 24 HRS. N/A FT.
CAVED AT N/A FT.

Geometrix Drilling Inc.
410-242-9220
Baltimore MD.

SPT-Standard Penetration Test: Driving 2 Inch OD Sampler 1.0 foot with 140 pound Hammer Falling 30 inches; Blow Count Recorded at 6 inch Intervals
PID - PhotoIonization Detector (parts per million)

HYNES & ASSOCIATES

LOG OF BORING B-1

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : October 5, 2016
Logged By: : C. Johnston
Drilled By: : M. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Dark grayish brown, wet, very loose, fine to medium SAND, with trace silt (10 YR 4/2, Sand)		SP	1	1-1-1-1	Scale 1" ~ 6.2 feet
2	Brown, wet, loose, fine to medium SAND, with trace silt (10 YR 5/3, Sand)		SP	2	6-4-3-2	Approximately 2 inches of organic bearing soil was encountered at the ground surface.
4	Brown, wet, very loose to loose, fine to medium SAND and SILT, trace clay (10 YR 5/3, Loam)		ML/SM	3	10-3-2-2	Groundwater was encountered at 9 feet during drilling operations.
6				4	10-3-3-3	
8	Light gray, wet to saturated, loose, fine to medium SAND, with some silt, trace clay (10 YR 7/2, Sandy loam)		SM	5	4-4-4-4	At completion water was at 7.5 feet; boring caved in at 10.5 feet.
10	Very pale brown, saturated, loose, fine to medium SAND, with trace silt (10 YR 7/3, Sand)		SP	6	3-4-4-5	Laboratory Test Results
12	Yellow, saturated, loose, fine to medium SAND, with little silt (10 YR 7/6, Loamy sand)		SP-SM	7	3-3-4-5	Sample No. 3 From 4 to 6 feet
14	Gray, saturated, loose, fine to medium SAND, with trace silt (10 YR 6/1, Sand)		SP	8	3-3-3-3	Sieve Analysis
16	Light yellowish brown, saturated, loose, fine to medium SAND, with trace silt (10 YR 6/4, Sand)		SP	9	3-3-3-4	Sieve Size / Passing % No. 4 100 No. 10 99.8 No. 20 98.9 No. 40 93.3 No. 60 81.0 No. 100 66.1 No. 200 44.6
18	Pale brown, saturated, loose, fine to coarse SAND, with trace silt (10 YR 6/3, Sand)		SP	10	3-3-4-4	
20	Boring terminated at 20 feet.					Natural Moisture = 16.9%
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HYNES & ASSOCIATES

LOG OF BORING B-2

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : October 5, 2016
Logged By: : C. Johnston
Drilled By: : M. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Pale brown, wet, very loose, fine to medium SAND, with trace silt (10 YR 6/3, Sand)		SP	1	1-1-1-1	Scale 1" ~ 6.2 feet
2	Dark yellowish brown, wet, very loose, fine to medium SAND, with little silt, trace clay (10 YR 4/6, Loamy sand)		SP-SM	2	2-2-2-2	Approximately 3 inches of organic bearing soil was encountered at the ground surface.
4				3	4-2-3-3	Groundwater was encountered at 11 feet during drilling operations.
6	Brown, wet, medium dense to loose, fine to medium SAND, with some silt, trace clay (10 YR 5/3, Sandy loam)			4	3-5-6-7	
8			SM	5	2-5-4-4	At completion water was at 10 feet; boring caved in at 11.5 feet.
10				6	3-3-3-3	Laboratory Test Results
12	Light gray, saturated, very loose to loose, fine to medium SAND, with trace to little silt, trace clay (10 YR 7/2, Sand)			7	2-2-3-3	Sample No. 8 From 14 to 16 feet
14				8	2-2-2-2	Sieve Analysis
16			SP	9	3-4-4-5	Sieve Size / Passing % 1/2" 100 3/8" 99.2 No. 4 97.9 No. 10 97.0 No. 20 94.8 No. 40 55.5 No. 60 30.0 No. 100 17.9 No. 200 12.7
18				10	4-4-5-5	
20	Boring terminated at 20 feet.					Natural Moisture = 10.9%
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HYNES & ASSOCIATES

LOG OF BORING B-3

(Page 1 of 1)

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : September 27, 2016
Logged By: : C. Johnston
Drilled By: : M. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Pale brown, wet, loose, fine to medium SAND, with trace silt (10 YR 6/3, Sand)		SP	1	1-2-2-3	Scale 1" ~ 6.2 feet
2	Very pale brown, wet, loose, fine to medium SAND, with trace silt (10 YR 7/3, Sand)		SP	2	3-2-2-3	No organic bearing soil was encountered at the ground surface.
4	Very pale brown, wet, medium dense, fine to medium SAND, with trace silt (10 YR 7/3, Sand)		SP	3	6-4-5-6	Groundwater was encountered at 13 feet during drilling operations.
6				4	4-6-6-7	At completion water was at 13 feet; boring caved in at 15 feet.
8	Light gray, wet, stiff, clayey SILT, with trace fine to medium sand (10 YR 7/2, Silt loam)		ML	5	3-4-7-7	Laboratory Test Results
10	Light gray, wet, loose, fine to medium SAND, with some clay (10 YR 7/2, Silty clay loam)		SC	6	3-3-4-5	Sample No. 6, From 10 to 12 feet
12	Light gray, wet to saturated, loose, fine to medium SAND, with little to some silt (10 YR 7/2, Sandy loam)		SM	7	3-3-4-4	Sieve Analysis
14	Very pale brown, saturated, soft, silty CLAY, with trace fine to medium sand (10 YR 7/3, Silty clay loam)		CL	8	1-1-2-3	Sieve Size / Passing % 3/8" 100 No. 4 99.9 No. 10 99.8 No. 20 99.5 No. 40 97.6 No. 60 85.2 No. 100 64.7 No. 200 28.9 Natural Moisture = 18.3%
16	Yellow, saturated, medium dense, fine to coarse SAND, with trace to little silt (10 YR 7/6, Loamy sand)		SP-SM	9	5-8-9-9	Sample No. 8, From 14 to 16 feet
18	Light gray, saturated, medium dense, fine to coarse SAND, with trace to little silt (10 YR 5/2, Loamy sand)		SP-SM	10	3-4-6-7	Atterberg Limits
20	Boring terminated at 20 feet.					Liquid Limit = 39 Plasticity Index = 19 Natural Moisture = 28.1%
22						Sample No. 9, From 16 to 18 feet
24						Sieve Analysis
26						Sieve Size / Passing % 3/8" 100 No. 4 99.9 No. 10 98.9 No. 20 92.1 No. 40 73.4 No. 60 47.0 No. 100 26.9 No. 200 14.4 Natural Moisture = 9.5%
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HYNES & ASSOCIATES

LOG OF BORING B-4

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : September 27, 2016
Logged By: : C. Johnston
Drilled By: : M. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Pale brown, wet, very loose, fine to medium SAND, with trace silt (10 YR 6/3, Sand)		SP	1	1-1-1-2	Scale 1" ~ 6.2 feet
2	Yellowish brown, wet, loose, fine to medium SAND, with little to some silt (10 YR 5/6, Sandy loam)		SM	2	2-2-2-4	No organic bearing soil was encountered at the ground surface.
4	Light yellowish brown, wet, loose, fine to medium SAND, with little to some silt, trace clay (10 YR 6/4, Sandy loam)		SM	3	6-5-5-5	Groundwater was encountered at 15 feet during drilling operations.
6	Reddish yellow, wet, medium stiff, silty CLAY, with trace fine to medium sand (7.5 YR 6/6, Silty clay loam)		CL	4	3-3-5-5	At completion water was at 15 feet; boring caved in at 15.5 feet.
8	Yellow, wet, medium stiff, clayey SILT, with trace fine to medium sand (10 YR 7/6, Silt loam)		ML-CL	5	2-3-6-7	Laboratory Test Results
10	Light gray, wet, medium stiff, silty CLAY, with trace fine to medium sand, mottled (10 YR 7/2, Silty clay loam)		CL	6	2-4-5-5	Sample No. 4, From 6 to 8 feet
12	Yellow, wet, medium dense, fine to medium SAND, with little to some silt (10 YR 7/6, Sandy loam)		SM	7	5-6-8-7	Sieve Analysis
14	Brownish yellow, wet to saturated, medium dense, fine to medium SAND, with some silt (10 YR 6/6, Sandy loam)		SM	8	5-8-8-8	Sieve Size / Passing % No. 4 100 No. 10 99.8 No. 20 97.8 No. 40 93.0 No. 60 87.0 No. 100 69.9 No. 200 50.1
16	Light gray, saturated, medium dense, fine to medium SAND, with trace to little silt (10 YR 7/2, Loamy sand)		SP-SM	9	4-5-6-7	Natural Moisture = 15.8%
18				10	3-3-5-6	Sample No. 6, From 10 to 12 feet
20	Boring terminated at 20 feet.					Atterberg Limits
22						Liquid Limit = 40 Plasticity Index = 18 Natural Moisture = 23.0%
24						Sample No. 9, From 16 to 18 feet
26						Sieve Analysis
28						Sieve Size / Passing % No. 4 100 No. 10 99.9 No. 20 99.5 No. 40 84.9 No. 60 28.5 No. 100 15.0 No. 200 10.2
30						Natural Moisture = 22.1%
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HYNES & ASSOCIATES

LOG OF BORING B-5

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : September 27, 2016
Logged By: : C. Johnston
Drilled By: : M. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Pale brown, wet, very loose, fine to medium SAND, with trace silt (10 YR 6/3, Sand)		SP	1	1-1-1-1	Scale 1" ~ 6.2 feet
2	Pale brown, wet, loose, fine to medium SAND, with trace silt (10 YR 6/3, Sand)		SP	2	7-3-3-4	No organic bearing soil was encountered at the ground surface.
4	Yellowish brown, wet, loose, fine to medium SAND, with little silt, trace clay (10 YR 5/6, Sandy loam)		SM	3	3-5-5-5	Groundwater was encountered at 13 feet during drilling operations.
6	Yellow, wet, stiff, clayey SILT, with trace fine to medium sand (10 YR 7/6, Silt loam)		ML	4	3-5-5-6	At completion water was at 14 feet; boring caved in at 14.5 feet.
8	Yellow, wet, loose, fine to medium SAND, with some silt (10 YR 7/6 ,Sandy loam)		SM	5	3-3-4-4	Laboratory Test Results
10	Very pale brown, wet, loose, fine to medium SAND, with some silt (10 YR 7/4, Sandy loam)		SM	6	3-4-4-4	Sample No. 7 From 12 to 14 feet
12	Very pale brown, wet to saturated, fine to coarse SAND, with trace to little silt (10 YR 7/3, Loamy sand)		SP-SM	7	3-4-3-3	Sieve Analysis
14				8	3-4-5-5	Sieve Size / Passing % No. 4 100 No. 10 99.3 No. 20 97.2 No. 40 70.2 No. 60 65.7 No. 100 27.8 No. 200 12.0
16	Very pale brown, saturated, loose, fine to medium SAND, with little silt (10 YR 7/3, Sandy loam)		SM	9	2-2-3-4	
18	Very pale brown, saturated, medium dense, fine to medium SAND, with little silt (10 YR 7/3, Sandy loam)		SM	10	2-4-6-7	Natural Moisture = 20.7%
20	Boring terminated at 20 feet.					
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HYNES & ASSOCIATES

LOG OF BORING B-6

(Page 1 of 1)

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : September 28, 2016
Logged By: : C. Johnston
Drilled By: : M. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Very pale brown, wet, very loose, fine to medium SAND, with trace silt (10 YR 7/4, Sand)		SP	1	1-1-1-2	Scale 1" ~ 6.2 feet
2				2	4-2-2-2	No organic bearing soil was encountered at the ground surface.
4	Brownish yellow, wet, loose, fine to medium SAND, with some silt, trace clay (10 YR 6/6, Sandy loam)		SM	3	2-3-4-5	Groundwater was encountered at 17 feet during drilling operations.
6	Yellow, wet, stiff, clayey SILT, with trace fine to medium sand (10 YR 8/6, Silty clay)		CL	4	6-6-7-7	At completion water was at 15.5 feet; boring caved in at 16.5 feet.
8	Yellow, wet, medium stiff, clayey SILT, with trace fine to medium sand (10 YR 8/6, Silty clay)		CL	5	4-5-5-5	Laboratory Test Results
10	Light gray, wet, very stiff, clayey SILT, with trace fine to medium sand (10 YR 7/2, Silty clay)		CL	6	4-8-8-9	Sample No. 4 From 6 to 8 feet
12	Brownish yellow, wet, medium dense, fine to medium SAND, with some silt (10 YR 6/6, Sandy loam)		SM	7	4-6-7-7	Atterberg Limits
14	Reddish yellow, wet, medium dense, fine to medium SAND, with some silt (7.5 YR 6/6, Sandy loam)		SM	8	8-10-12-14	Liquid Limit = 36 Plasticity Index = 16 Natural Moisture = 11.7%
16	Very pale brown, wet to saturated, medium dense, fine to medium SAND, with trace to little silt (10 YR 7/3, Loamy sand)		SP-SM	9	4-6-6-7	Sample No. 9 From 16 to 18 feet
18	Light yellowish brown, saturated, loose, fine to coarse SAND, with trace silt (10 YR 6/4, Sand)		SP	10	3-4-4-4	Sieve Analysis
20	Boring terminated at 20 feet.					
22						Sieve Size / Passing % 3/8" 100 No. 4 98.6 No. 10 97.3 No. 20 91.4 No. 40 71.2 No. 60 33.6 No. 100 14.6 No. 200 8.1
24						Natural Moisture = 21.3
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HYNES & ASSOCIATES

LOG OF BORING B-7

(Page 1 of 1)

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : September 27, 2016
Logged By: : C. Johnston
Drilled By: : M. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Light yellowish brown, wet, very loose, fine to medium SAND, with trace silt (10 YR 6/4, Sand)		SP	1	1-1-1-1	Scale 1" ~ 6.2 feet
2				2	6-2-2-3	No organic bearing soil was encountered at the ground surface.
4	Very pale brown, wet, very loose, fine to medium SAND, with trace silt (10 YR 7/4, Sand)		SP	3	4-3-2-3	Groundwater was encountered at 17 feet during drilling operations.
6	Very pale brown, wet, loose, fine to medium SAND, with trace silt (10 YR 7/4, Sand)		SP	4	2-3-4-4	Boring caved in at 14 feet.
8	Brownish yellow, wet, loose, fine to medium SAND, with little to some silt (10 YR 6/6, Sandy loam)		SM	5	4-4-5-5	Laboratory Test Results
10	Very pale brown, wet, medium dense, fine to medium SAND, with trace silt (10 YR 7/3, Sand)		SP	6	4-7-5-6	Sample No. 2 From 2 to 4 feet
12	Very pale brown, wet, stiff, clayey SILT, with trace fine to medium sand (10 YR 7/4, Silt loam)		ML	7	2-4-7-8	Sieve Analysis
14	Brownish yellow, wet, medium dense, fine to medium SAND, with trace silt (10 YR 6/6, Sand)		SP	8	6-8-8-9	Sieve Size / Passing % No. 4 100 No. 10 99.8 No. 20 96.0 No. 40 79.3 No. 60 41.7 No. 100 15.1 No. 200 4.1
16	Very pale brown, wet to saturated, medium dense, fine to medium SAND, with trace silt (10 YR 7/4, Sand)		SP	9	3-4-4-4	Natural Moisture = 3.6%
18	Light yellowish brown, saturated, loose, fine to coarse SAND, with trace silt (10 YR 6/4, Sand)		SP	10	4-5-5-7	Sample No. 9 From 16 to 18 feet
20	Boring terminated at 20 feet.					Sieve Analysis Sieve Size / Passing % No. 4 100 No. 10 98.7 No. 20 89.6 No. 40 56.0 No. 60 25.0 No. 100 12.7 No. 200 8.3 Natural Moisture = 19.2%
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HYNES & ASSOCIATES

LOG OF BORING B-8

(Page 1 of 1)

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : September 27, 2016
Logged By: : C. Johnston
Drilled By: : M. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Dark yellowish brown, wet, very loose, fine to medium SAND, with trace silt (10 YR 4/4, Sand)		SP	1	1-1-1-2	Scale 1" ~ 6.2 feet
2	Light yellowish brown, wet, very loose, fine to medium SAND, with trace silt (10 YR 6/4, Sand)		SP	2	1-1-1-1	Approximately 2 inches of organic bearing soil was encountered at the ground surface.
4				3	1-1-1-2	
6	Light yellowish brown, wet, loose, fine to medium SAND, with trace silt (10 YR 6/4, Sand)		SP	4	2-3-3-3	Groundwater was encountered at 18 feet during drilling operations.
8				5	3-3-4-4	Boring caved in at 15 feet.
10				6	3-3-4-4	Laboratory Test Results
12	Very pale brown, wet, medium dense, fine to medium SAND, with trace silt (10 YR 7/3, Sand)		SP	7	3-4-5-6	Sample No. 9 From 16 to 18 feet
14	Very pale brown, wet, loose, fine to medium SAND, with trace silt (10 YR 7/3, Sand)		SP	8	4-4-5-5	Sieve Analysis
16	Brownish yellow, wet, medium dense, fine to medium SAND, with trace to little silt (10 YR 6/6, Loamy sand)		SP-SM	9	3-3-6-6	Sieve Size / Passing % No. 10 100 No. 20 99.8 No. 40 99.1 No. 60 86.3 No. 100 26.5 No. 200 12.4
18	Yellow, wet to saturated, medium stiff, silty CLAY, with trace fine to medium sand (10 YR 7/6, Silty clay loam)		CH	10	2-3-5-5	Natural Moisture = 26.5%
20	Boring terminated at 20 feet.					Sample No. 10 From 18 to 20 feet
22						Atterberg Limits
24						Liquid Limit = 52 Plasticity Index = 26 Natural Moisture = 27.2%
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HYNES & ASSOCIATES

LOG OF BORING B-9

(Page 1 of 1)

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : September 20, 2016
Logged By: : C. Johnston
Drilled By: : B. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Light brown, wet, medium dense, fine to medium SAND, with trace silt (Sand)		SP	1	4-4-7-9	Scale 1" ~ 6.2 feet
2	Orange-brown, wet, medium dense, fine to medium SAND, with some silt (Sandy loam)		SM	2	3-4-6-7	No organic bearing soil was encountered at the ground surface.
4				3	7-7-7-7	Groundwater was encountered at 12 feet during drilling operations.
6	Light brown, wet, medium dense to loose, fine to medium SAND, with trace silt (Sand)		SP	4	8-4-6-8	Boring caved in at 10 feet.
8				5	2-6-5-5	Laboratory Test Results
10	Gray-brown, wet to saturated, loose, fine to medium SAND, with trace silt (Sand)		SP	6	8-3-4-5	Sample No. 2 From 2 to 4 feet
12				7	2-3-3-3	Sieve Analysis
14	Orange-brown, saturated, loose, fine to medium SAND, with trace silt (Sand)		SP	8	3-4-4-5	Sieve Size / Passing % 3/8" 100 No. 4 99.1 No. 10 98.2 No. 20 93.1 No. 40 72.2 No. 60 52.1 No. 100 36.0 No. 200 25.3
16	Gray, saturated, loose, fine to medium SAND, with trace silt (Sand)		SP	9	2-3-4-6	
18				10	2-3-4-6	Natural Moisture = 5.1%
20	Boring terminated at 20 feet.					
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HYNES & ASSOCIATES

LOG OF BORING B-10

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : October 5, 2016
Logged By: : C. Johnston
Drilled By: : M. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Brown, wet, very loose to loose, fine to medium SAND, with trace silt (10 YR 5/3, Sand)		SP	1	1-1-2-2	Scale 1" ~ 6.2 feet
2				2	6-3-2-2	Approximately 6 inches of organic bearing soil was encountered at the ground surface.
4				3	10-2-2-2	
6				4	11-4-2-2	Groundwater was encountered at 8 feet during drilling operations.
8	Pale brown, saturated, very loose, fine to medium SAND, with trace to little silt (10 YR 6/3, Sand)		SP	5	3-2-2-2	At completion water was at 6.5 feet; boring caved in at 7.5 feet.
10				6	1-1-1-2	Laboratory Test Results
12	Light gray, saturated, very loose to loose, fine to medium SAND, with trace silt (10 YR 7/2, Loamy sand)		SP-SM	7	1-1-1-2	Sample No. 5 From 8 to 10 feet
14				8	3-1-1-1	Sieve Analysis
16				9	1-2-4-4	Sieve Size / Passing % No. 4 100 No. 10 97.2 No. 20 92.3 No. 40 52.3 No. 60 30.7 No. 100 17.3 No. 200 12.5
18				10	2-3-4-5	
20	Boring terminated at 20 feet.					Natural Moisture = 17.5%
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LOG OF BORING B-11

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : September 20, 2016
Logged By: : C. Johnston
Drilled By: : B. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Light brown, wet to saturated, very loose to medium dense, fine to medium SAND, with trace silt (Sand)		SP	1	1-2-2-2	Scale 1" ~ 6.2 feet
2				2	1-2-3-6	No organic bearing soil was encountered at the ground surface.
4				3	4-4-6-5	Groundwater was encountered at 10 feet during drilling operations.
6				4	5-3-3-4	Boring caved in at 11 feet.
8				5	1-2-2-3	Laboratory Test Results
10	Brown, saturated, soft, clayey SILT, with trace fine to medium sand (Silt loam)		ML	6	2-2-2-2	Sample No. 8 From 14 to 16 feet
12	Grayish brown, saturated, loose, fine to medium SAND, with some silt (Sandy loam)		SM	7	1-2-3-4	Sieve Analysis
14	Orange-brown, saturated, medium dense, fine to medium SAND, with trace silt (Sand)		SP	8	3-5-6-8	Sieve Size / Passing % 3/8" 100 No. 4 99.9 No. 10 99.1 No. 20 90.6 No. 40 56.9 No. 60 23.7 No. 100 10.2 No. 200 5.9
16				9	3-4-7-7	
18	Orange-brown, saturated, medium dense, fine to coarse SAND, with trace silt (Sand)		SP	10	3-4-6-6	
20	Boring terminated at 20 feet.					Natural Moisture = 19.8%
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HYNES & ASSOCIATES

LOG OF BORING B-12

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : October 26, 2016
Logged By: : C. Johnston
Drilled By: : J. Briddell
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Brown, wet, very loose, fine to medium SAND, with trace silt (Sand)		SP	1	2-2-2-2	Scale 1" ~ 6.2 feet
2	Orange-brown, wet, very loose, fine to medium SAND, with trace silt (Sand)		SP	2	2-2-2-3	No organic bearing soil was encountered at the ground surface.
4	Light brown, wet to saturated, very loose to loose, fine to medium SAND, with trace to little silt (Sand)		SP	3	2-2-2-2	Groundwater was encountered at 7.5 feet during drilling operations.
6				4	3-4-5-5	Boring caved in at 6 feet.
8				5	2-2-4-6	Laboratory Test Results
10				6	7-5-4-6	Sample No. 5 From 8 to 10 feet
12	Brown-gray, saturated, loose to very loose, fine to coarse SAND, with trace silt (Sand)		SP	7	3-5-5-5	Sieve Analysis
14				8	2-2-4-4	Sieve Size / Passing % No. 4 100 No. 10 99.4 No. 20 92.2 No. 40 59.5 No. 60 30.6 No. 100 19.3 No. 200 13.2
16				9	1-1-1-3	
18				10	2-3-4-6	
20	Boring terminated at 20 feet.					Natural Moisture = 17.5%
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HYNES & ASSOCIATES

LOG OF BORING B-13

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : September 21, 2016
Logged By: : C. Johnston
Drilled By: : B. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Light yellowish brown, wet, very loose, fine to medium SAND, with trace to little silt (10 YR 6/4, Loamy sand)		SP-SM	1	1-2-2-2	Scale 1" ~ 6.2 feet
2	Very pale brown, wet, very loose, fine to medium SAND, with trace silt (10 YR 7/3, Sand)		SP	2	1-2-2-3	No organic bearing soil was encountered at the ground surface.
4	Brownish yellow, wet, loose, fine to medium SAND, with little to some silt (10 YR 6/6, Sandy loam)		SM	3	3-4-4-5	Groundwater was encountered at 10 feet during drilling operations.
6	Very pale brown, wet, loose, fine to medium SAND, with little to some silt (10 YR 7/3, Sandy loam)		SM	4	2-2-3-3	Boring caved in at 11 feet.
8				5	2-3-4-4	Laboratory Test Results
10	Light gray, wet to saturated, very loose, fine to medium SAND, with trace to little silt (10 YR 7/2, Loamy sand)		SP-SM	6	2-2-2-3	Sample No. 6 From 10 to 12 feet
12				7	3-2-3-4	Sieve Analysis
14				8	2-3-3-4	Sieve Size / Passing % No. 10 100 No. 20 99.6 No. 40 93.2 No. 60 67.4 No. 100 30.3 No. 200 18.3
16				9	2-2-3-4	
18				10	1-2-4-5	
20	Boring terminated at 20 feet.					Natural Moisture = 25.5%
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LOG OF BORING B-14

(Page 1 of 1)

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : October 5, 2016
Logged By: : C. Johnston
Drilled By: : M. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Pale brown, wet, very loose to loose, fine to medium SAND, with trace silt (10 YR 6/3, Sand)		SP	1	2-2-2-2	Scale 1" ~ 6.2 feet
2				2	6-1-2-2	Approximately 6 inches of organic bearing soil was encountered at the ground surface.
4				3	9-3-3-3	
6	Pale brown, wet, medium dense, fine to medium SAND, with some silt, little clay (10 YR 6/3, Sandy loam)		SM	4	10-6-6-5	Groundwater was encountered at 8 feet during drilling operations.
8	Light gray, saturated, loose, fine to medium SAND, with trace silt (10 YR 7/2, Sand)		SP	5	4-4-3-3	At completion water was at 6.5 feet; boring caved in at 7.5 feet.
10	Light gray, saturated, loose, fine to medium SAND, with little silt, trace clay (10 YR 7/2, Loamy sand)		SP-SM	6	2-2-4-4	Laboratory Test Results
12	Brownish yellow, saturated, loose, fine to medium SAND, with trace to little silt (10 YR 6/8, Sand)		SP	7	2-2-4-4	Sample No. 9 From 16 to 18 feet
14				8	3-3-3-4	Sieve Analysis
16				9	3-3-3-3	Sieve Size / Passing % No. 4 100 No. 10 99.9 No. 20 96.5 No. 40 73.2 No. 60 73.2 No. 100 16.8 No. 200 11.8
18				10	4-3-3-2	
20	Boring terminated at 20 feet.					Natural Moisture = 20.5%
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HYNES & ASSOCIATES

LOG OF BORING B-15

(Page 1 of 1)

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : September 21, 2016
Logged By: : C. Johnston
Drilled By: : B. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Pale brown, wet, very loose, fine to medium SAND, with trace to little silt (10 YR 6/3, Loamy sand)		SP-SM	1	1-1-2-2	Scale 1" ~ 6.2 feet
2	Brownish yellow, wet, loose, fine to medium SAND, with little to some silt (10 YR 6/6, Sandy loam)		SM	2	1-2-3-5	No organic bearing soil was encountered at the ground surface.
4	Very pale brown, wet, loose, fine to medium SAND, with little to some silt (10 YR 7/3, Sandy loam)		SM	3	3-4-3-4	Groundwater was encountered at 9 feet during drilling operations.
6	Yellow, wet, very loose, fine to coarse SAND, with trace silt (10 YR 7/6, Sand)		SP	4	1-1-1-1	Boring caved in at 9.5 feet.
8	Light gray, wet to saturated, very loose, fine to coarse SAND, with trace to little silt (10 YR 7/1, Loamy sand)		SP-SM	5	WOH/18"-1	Laboratory Test Results Sample No. 5 From 8 to 10 feet Sieve Analysis Sieve Size / Passing % 3/8" 100 No. 4 98.2 No. 10 96.1 No. 20 88.1 No. 40 66.0 No. 60 40.7 No. 100 20.5 No. 200 13.0 Natural Moisture = 19.9% Sample No. 8 From 14 to 16 feet Sieve Analysis Sieve Size / Passing % 3/8" 100 No. 4 99.4 No. 10 99.1 No. 20 94.1 No. 40 85.2 No. 60 42.8 No. 100 17.1 No. 200 11.5 Natural Moisture = 25.5%
10				6	1-2-4-4	
12	Light gray, saturated, loose, fine to coarse SAND, with trace silt (10 YR 7/1, Sand)		SP	7	1-2-3-4	
14	Light gray, saturated, loose, fine to medium SAND, with trace to little silt (10 YR 7/2, Loamy sand)		SP-SM	8	1-2-3-3	
16	Very pale brown, saturated, loose, fine to medium SAND, with some silt (10 YR 7/3, Sandy loam)		SM	9	2-2-2-3	
18	Very pale brown, saturated, loose, fine to coarse SAND, with trace to little silt (10 YR 7/3, Loamy sand)		SP-SM	10	2-2-3-4	
20	Boring terminated at 20 feet.					
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HYNES & ASSOCIATES

LOG OF BORING B-16

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : September 21, 2016
Logged By: : C. Johnston
Drilled By: : B. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Pale brown, wet, very loose, fine to medium SAND, with little to some silt, trace clay (10 YR 6/3, Sandy loam)		SM	1	1-2-2-2	Scale 1" ~ 6.2 feet
2	Pale brown, wet, loose, fine to medium SAND, with little to some silt, trace clay (10 YR 6/3, Sandy loam)		SM	2	1-3-3-4	No organic bearing soil was encountered at the ground surface.
4	Very pale brown, wet, loose, fine to medium SAND, with some silt, trace clay (10 YR 7/3, Sandy loam)		SM	3	3-3-4-5	Groundwater was encountered at 9 feet during drilling operations.
6	Very pale brown, wet, very loose, fine to coarse SAND, with little silt (10 YR 7/3, Sandy loam)		SM	4	2-3-2-3	Boring caved in at 10 feet.
8	Light gray, wet to saturated, very loose, fine to coarse SAND, with trace to little silt (10 YR 7/1, Loamy sand)		SP-SM	5	1-2-2-3	Laboratory Test Results
10	White, saturated, very loose, fine to medium SAND, with little to some silt (10 YR 8/1, Sandy loam)		SM	6	1-2-2-2	Sample No. 5 From 8 to 10 feet
12	Light gray, saturated, loose, fine to coarse SAND, with trace to little silt (10 YR 7/2, Sand)		SP	7	1-2-3-4	Sieve Analysis
14				8	2-2-2-3	Sieve Size / Passing % 3/8" 100 No. 4 99.9 No. 10 98.7 No. 20 90.1 No. 40 61.2 No. 60 33.1 No. 100 17.9 No. 200 12.5
16	Very pale brown, saturated, very loose, fine to medium SAND, with trace to little silt (10 YR 7/3, Loamy sand)		SP-SM	9	1-2-2-2	Natural Moisture = 20.0%
18	Light gray, saturated, loose, fine to medium SAND, with trace to little silt (10 YR 7/2, Loamy sand)		SP-SM	10	1-2-2-4	Sample No. 7 From 12 to 14 feet
20	Boring terminated at 20 feet.					Sieve Analysis
22						Sieve Size / Passing % No. 4 100 No. 10 99.6 No. 20 96.4 No. 40 64.0 No. 60 22.2 No. 100 10.6 No. 200 7.0
24						Natural Moisture = 26.0%
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LOG OF BORING B-17

(Page 1 of 1)

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : September 16, 2016
Logged By: : C. Johnston
Drilled By: : M. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Light yellowish brown, wet, loose, fine to medium SAND, with some silt (10 YR 6/4, Sandy loam)		SM	1	3-4-4-5	Scale 1" ~ 6.2 feet
2	Brownish yellow, wet, medium dense, fine to medium SAND, with little to some silt, trace clay (10 YR 6/6, Sandy loam)		SM	2	4-5-5-7	No organic bearing soil was encountered at the ground surface.
4				3	4-5-5-8	Groundwater was encountered at 9 feet during drilling operations.
6	Very pale brown, wet, loose, fine to medium SAND, with little to some silt (10 YR 7/4, Sandy loam)		SM	4	12-6-5-1	At completion water was at 10 feet; boring caved in at 11 feet.
8	Very pale brown, wet to saturated, loose, fine to medium SAND, with little to some silt (10 YR 7/4, Sandy loam)		SM	5	12-6-5-5	Laboratory Test Results
10	Yellow, saturated, medium dense, fine to coarse SAND, with trace to little silt (10 YR 7/6, Loamy sand)		SP-SM	6	5-5-6-7	Sample No. 6 From 10 to 12 feet
12				7	5-5-5-6	Sieve Analysis
14				8	4-5-5-5	Sieve Size / Passing % No. 10 100 No. 20 99.6 No. 40 96.4 No. 60 67.0 No. 100 26.1 No. 200 16.7
16	Yellow, saturated, medium dense, fine to medium SAND, with little to some silt (10 YR 7/6, Sandy loam)		SM	9	3-3-4-7	
18				10	3-3-5-6	Natural Moisture = 30.3%
20	Boring terminated at 20 feet.					
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LOG OF BORING B-18

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : September 19, 2016
Logged By: : C. Johnston
Drilled By: : B. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Very pale brown, wet, medium dense, fine to medium SAND, with trace silt (Sand)		SP	1	4-5-5-6	Scale 1" ~ 6.2 feet
2				2	4-5-5-7	No organic bearing soil was encountered at the ground surface.
4	Yellowish brown, wet, medium dense, fine to medium SAND, with little to some silt (10 YR 5/6, Sandy loam)		SM	3	7-8-7-9	Groundwater was encountered at 13 feet during drilling operations.
6	Light yellowish brown, wet, medium dense, fine to medium SAND, with little to some silt (10 YR 6/4, Sandy loam)		SM	4	7-8-6-7	Boring caved in at 12 feet.
8	Pale brown, wet, stiff, silty CLAY, with trace fine to medium sand (10 YR 6/3, Silty clay loam)		CL	5	4-7-6-7	Laboratory Test Results
10	Light gray, wet, very stiff, silty CLAY, with trace fine to medium sand (10 YR 7/2, Silty clay loam)		CL	6	6-8-10-12	Sample No. 5 From 8 to 10 feet
12	Light gray, wet to saturated, medium dense, fine to coarse SAND, with trace silt (10 YR 7/2, Sand)		SP	7	3-8-11-8	Atterberg Limits
14	Very pale brown, saturated, medium dense, fine to medium SAND, with trace to little silt (10 YR 7/3, Loamy sand)		SP-SM	8	2-6-7-6	Liquid Limit = 41 Plasticity Index = 17 Natural Moisture = 21.6%
16	Light gray, saturated, medium dense, fine to medium SAND, with trace to little silt (10 YR 7/2, Loamy sand)		SP-SM	9	3-5-5-7	Sample No. 8 From 14 to 16 feet
18				10	4-6-7-8	Sieve Analysis
20	Boring terminated at 20 feet.					Sieve Size / Passing % No. 4 100 No. 10 99.7 No. 20 97.2 No. 40 73.3 No. 60 38.6 No. 100 15.0 No. 200 7.0 Natural Moisture = 19.4%
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HYNES & ASSOCIATES

LOG OF BORING B-19

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : September 21, 2016
Logged By: : C. Johnston
Drilled By: : B. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Light yellow brown, wet, very loose, fine to medium SAND, with trace silt (10 YR 6/4, Sand)		SP	1	1-2-2-3	Scale 1" ~ 6.2 feet
2	Brownish yellow, wet, very loose, fine to medium SAND, with trace silt, trace clay (10 YR 6/6, Sandy loam)		SM	2	1-2-2-2	No organic bearing soil was encountered at the ground surface.
4	Yellow, wet, loose, fine to medium SAND, with some silt, trace clay (10 YR 7/6, Sandy loam)		SM	3	2-3-3-5	Groundwater was encountered at 11 feet during drilling operations.
6	Light gray, wet, loose, fine to medium SAND, with trace silt (10 YR 7/6, Sand)		SP	4	2-4-4-3	Boring caved in at 11 feet.
8	Light gray, wet, very loose, fine to medium SAND, with some silt, trace clay (10 YR 7/2, Sandy loam)		SM	5	2-3-2-3	Laboratory Test Results
10	Light gray, wet to saturated, loose, fine to coarse SAND, with trace silt (10 YR 7/1, Sand)		SP	6	2-3-3-4	Sample No. 6 From 10 to 12 feet
12	Light gray, saturated, loose, fine to medium SAND, with little to some silt (10 YR 7/2, Sandy loam)		SM	7	2-2-4-5	Sieve Analysis
14	Light gray, saturated, loose, fine to coarse SAND, with trace silt (10 YR 7/1, Sand)		SP	8	2-3-4-4	Sieve Size / Passing % 3/8" 100 No. 4 98.9 No. 10 97.6 No. 20 88.6 No. 40 53.6 No. 60 23.4 No. 100 13.6 No. 200 9.5
16				9	2-2-4-4	Natural Moisture = 19.5%
18	Light gray, saturated, loose, fine to medium SAND, with little to some silt, trace fine gravel (10 YR 7/2, Sandy loam)		SM	10	1-3-4-5	Sample No. 9 From 16 to 18 feet
20	Boring terminated at 20 feet.					Sieve Analysis
22						Sieve Size / Passing % 3/4" 100 1/2" 97.8 3/8" 97.8 No. 4 94.2 No. 10 77.9 No. 20 52.6 No. 40 26.7 No. 60 14.1 No. 100 7.9 No. 200 5.2
24						Natural Moisture = 12.8%
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HYNES & ASSOCIATES

LOG OF BORING B-20

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : September 21, 2016
Logged By: : C. Johnston
Drilled By: : B. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Pale brown, wet, very loose, fine to medium SAND, with trace silt (10 YR 6/3, Sand)		SP	1	1-2-2-2	Scale 1" ~ 6.2 feet
2	Light yellowish brown, wet, very loose, fine to medium SAND, with little to some silt, trace clay (10 YR 6/4, Sandy loam)		SM	2	1-2-2-3	No organic bearing soil was encountered at the ground surface.
4	Pale brown, wet, loose, fine to medium SAND, with trace silt (10 YR 6/3, Sand)		SP	3	1-3-3-3	Groundwater was encountered at 12 feet during drilling operations.
6	Very pale brown, wet, loose, fine to medium SAND, with little to some silt, trace clay (10 YR 7/3, Sandy loam)		SM	4	2-3-4-5	Boring caved in at 10.5 feet.
8	Very pale brown, wet to saturated, loose, fine to medium SAND, with little to some silt (10 YR 8/2, Sandy loam)		SM	5	2-3-3-4	Laboratory Test Results
10	Light gray, saturated, loose, fine to medium SAND, with some silt (10 YR 7/2, Sandy loam)		SM	6	1-2-2-3	Sample No. 7 From 12 to 14 feet
12	Light gray, saturated, loose, fine to coarse SAND, with trace silt (10 YR 7/2, Sand)		SP	7	2-2-4-4	Sieve Analysis
14				8	2-3-3-4	Sieve Size / Passing % 3/8" 100 No. 4 99.5 No. 10 98.9 No. 20 87.0 No. 40 37.5 No. 60 18.7 No. 100 10.9 No. 200 7.6
16				9	2-2-4-4	
18				10	1-3-4-5	
20	Boring terminated at 20 feet.					Natural Moisture = 25.4%
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HYNES & ASSOCIATES

LOG OF BORING B-21

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : September 20, 2016
Logged By: : C. Johnston
Drilled By: : B. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Pale brown, wet, very loose, fine to medium SAND, with little to some silt, trace clay (10 YR 6/3, Sandy loam)		SM	1	2-2-2-3	Scale 1" ~ 6.2 feet
2	Pale brown, wet, loose, fine to medium SAND, with little to some silt, trace clay (10 YR 6/3, Sandy loam)		SM	2	2-3-3-4	No organic bearing soil was encountered at the ground surface.
4	Very pale brown, wet, loose, fine to medium SAND, with little to some silt, trace clay (10 YR 7/4, Sandy loam)		SM	3	2-2-4-6	Groundwater was encountered at 14 feet during drilling operations.
6	Light gray, wet, loose, fine to medium SAND, with little silt, trace clay (10 YR 5/2, Sandy loam)		SM	4	2-2-3-5	At completion water was at 12 feet; boring caved in at 13 feet.
8	Light gray, wet, medium dense, fine to medium SAND, with little silt, trace clay (10 YR 5/2, Sandy loam)		SM	5	2-2-5-6	Laboratory Test Results
10	Light gray, wet, loose, fine to medium SAND, with little silt, trace clay (10 YR 5/2, Sandy loam)		SM	6	2-3-3-5	Sample No. 7 From 12 to 14 feet
12	Very pale brown, wet to saturated, loose, fine to medium SAND, with some silt (10 YR 8/2, Sandy loam)		SM	7	2-2-2-3	Sieve Analysis
14				8	3-3-4-4	Sieve Size / Passing % No. 4 100 No. 10 99.8 No. 20 97.8 No. 40 88.2 No. 60 78.8 No. 100 41.3 No. 200 25.8
16	Light gray, saturated, loose, fine to coarse SAND, with trace silt (10 YR 7/1, Sand)		SP	9	2-2-4-4	
18	Light gray, saturated, medium dense, fine to medium SAND, with little to some silt (10 YR 7/2, Loamy sand)		SP-SM	10	2-3-5-6	
20	Boring terminated at 20 feet.					Natural Moisture = 26.1%
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LOG OF BORING B-22

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : September 20, 2016
Logged By: : C. Johnston
Drilled By: : M. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Pale brown, wet, very loose, fine to medium SAND, with trace silt (10 YR 6/3, Sand)		SP	1	1-1-2-3	Scale 1" ~ 6.2 feet
2	Yellowish brown, wet, very loose to loose, fine to medium SAND with trace silt (10 YR 5/6, Sand)		SP	2	1-2-2-3	Approximately 4 inches of organic bearing soil was encountered at the ground surface.
4				3	2-3-4-6	Groundwater was encountered at 14 feet during drilling operations.
6	Brown, wet, loose to medium dense, fine to medium SAND, with trace silt (10 YR 5/3, Sand)		SP	4	3-3-4-6	At completion water was at 14 feet; boring caved in at 17 feet.
8				5	3-5-6-8	Laboratory Test Results
10	Brown, wet, very loose, fine to medium SAND, with little silt, trace clay (10 YR 5/3, Loamy sand)		SP-SM	6	1-2-2-3	Sample No. 7 From 12 to 14 feet
12	Light grayish brown, wet, medium stiff, SILT, with little fine sand, trace clay (10 YR 6/2, Silt loam)		ML	7	2-3-4-5	Sieve Analysis
14	Light gray, saturated, medium stiff, silty CLAY, with trace fine sand (10 YR 7/2, Silty clay loam)		CH	8	2-4-4-4	Sieve Size / Passing % 3/8" 100 No. 4 99.9 No. 10 99.9 No. 20 99.8 No. 40 99.2 No. 60 96.8 No. 100 92.0 No. 200 82.3
16	Pale brown, saturated, medium dense, fine to coarse SAND, with trace silt, trace clay (10 YR 6/3, Sand)		SP	9	2-4-9-9	
18				10	2-3-10-12	Natural Moisture = 21.1%
20	Boring terminated at 20 feet.					
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LOG OF BORING B-23

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : September 21, 2016
Logged By: : C. Johnston
Drilled By: : B. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Brownish yellow, wet, very loose, fine to medium SAND, with trace silt (10 YR 6/6, Sand)		SP	1	1-2-2-2	Scale 1" ~ 6.2 feet
2				2	2-3-2-2	No organic bearing soil was encountered at the ground surface.
4	Very pale brown, wet, loose, fine to medium SAND, with trace silt (10 YR 7/3, Sand)		SP	3	3-2-3-5	Groundwater was encountered at 13 feet during drilling operations.
6	Light gray, wet, medium dense, fine to medium SAND, with trace silt (10 YR 7/2, Sand)		SP	4	4-3-6-7	Boring caved in at 11 feet.
8	Very Pale brown, wet, medium dense, fine to medium SAND, with trace silt (10 YR 7/3, Sand)		SP	5	2-4-6-6	Laboratory Test Results
10				6	3-4-5-6	Sample No. 3 From 4 to 6 feet
12	Light gray, wet to saturated, loose, fine to medium SAND, with little to some silt (10 YR 7/2, Sandy loam)		SM	7	2-2-3-4	Sieve Analysis
14				8	1-2-3-4	Sieve Size / Passing % No. 4 100 No. 10 99.9 No. 20 98.0 No. 40 67.1 No. 60 23.0 No. 100 4.5 No. 200 1.9
16	Light gray, saturated, loose, fine to coarse SAND, with trace silt (10 YR 7/2, Sand)		SP	9	4-3-3-4	Natural Moisture = 3.5%
18	Light gray, saturated, loose, fine to medium SAND, with little to some silt (10 YR 7/1, Sandy loam)		SM	10	4-2-4-5	Sample No. 7 From 12 to 14 feet
20	Boring terminated at 20 feet.					Sieve Analysis
22						Sieve Size / Passing % No. 4 100 No. 10 99.5 No. 20 94.4 No. 40 61.2 No. 60 26.4 No. 100 14.7 No. 200 10.8
24						Natural Moisture = 22.4%
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LOG OF BORING B-24

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : September 20, 2016
Logged By: : C. Johnston
Drilled By: : B. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Pale brown, wet, very loose, fine to medium SAND, with trace silt (10 YR 6/3, Sand)		SP	1	2-2-3-3	Scale 1" ~ 6.2 feet
2				2	2-2-3-3	Approximately 6 inches of organic bearing soil was encountered at the ground surface.
4	Light yellowish brown, wet, very loose, fine to medium SAND, with trace silt (10 YR 6/4, Sand)		SP	3	2-2-2-3	Groundwater was encountered at 16 feet during drilling operations.
6	Yellowish brown, wet, loose to medium dense, fine to medium SAND, with trace silt (10 YR 5/6, Sand)		SP	4	6-4-4-6	Boring caved in at 15 feet.
8				5	2-5-6-8	Laboratory Test Results
10	Light brownish gray, wet, mediumd stiff, silty CLAY, with trace fine sand (10 YR 6/2, Silty clay loam)		CL	6	2-3-3-3	Sample No. 7 From 12 to 14 feet
12	Light brownish gray, wet, medium stiff, clayey SILT, with trace fine sand (10 YR 6/2, Silt loam)		ML	7	2-3-5-6	Sieve Analysis
14	Brown, wet, medium stiff, silty CLAY, with trace fine sand (10 YR 5/3, Silty clay loam)		CL	8	2-4-4-5	Sieve Size / Passing % 3/8" 100 No. 4 99.9 No. 10 99.6 No. 20 99.2 No. 40 97.9 No. 60 92.1 No. 100 79.9 No. 200 65.4
16	Pale brown, saturated, loose, fine to medium SAND, with trace silt (10 YR 6/3, Sand)		SP	9	3-4-4-4	
18				10	3-4-5-6	Natural Moisture = 22.0%
20	Boring terminated at 20 feet.					
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LOG OF BORING B-25

(Page 1 of 1)

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : October 11, 2016
Logged By: : M. Spino
Drilled By: : M. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Light yellowish brown, wet, very loose, fine to medium SAND, with trace to little silt (10 YR 6/4, Loamy sand)		SP-SM	1	1-1-1-1	Scale 1" ~ 6.2 feet
2	Light yellowish brown, wet, very loose, fine to medium SAND, with some silt, trace clay (10 YR 6/4, Sandy loam)		SM	2	1-1-1-2	No organic bearing soil was encountered at the ground surface.
4	Very pale brown, wet to saturated, very loose, fine to coarse SAND, with little to some silt, little clay (10 YR 7/3, Sandy loam)		SM	3	1-2-2-3	Groundwater was encountered at 6 feet during drilling operations.
6	Very pale brown, saturated, loose, fine to coarse SAND, with trace silt, trace clay (10 YR 7/3, Sandy loam)		SP	4	2-3-4-4	At completion water was at 6 feet; boring caved in at 11.5 feet.
8	Very pale brown, saturated, loose, fine to coarse SAND, with trace silt (10 YR 7/4, Sand)		SP	5	2-3-4-4	Laboratory Test Results
10	White, saturated, loose, fine to coarse SAND, with trace to little silt (10 YR 8/1, Loamy sand)		SP-SM	6	2-4-4-4	Sample No. 8 From 14 to 16 feet
12	Very pale brown, saturated, loose, fine to coarse SAND, with some silt, little clay (10 YR 8/2, Sandy loam)		SM	7	2-3-4-4	Sieve Analysis
14	White, saturated, very loose, fine to medium SAND, with trace to little silt (10 YR 8/1, Sand)		SP	8	3-2-2-3	Sieve Size / Passing % No. 4 100 No. 10 99.7 No. 20 99.3 No. 40 94.7 No. 60 41.9 No. 100 21.4 No. 200 17.7
16				9	2-3-3-3	
18				10	2-2-3-3	
20	Boring terminated at 20 feet.					Natural Moisture = 23.8%
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LOG OF BORING B-26

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : October 11, 2016
Logged By: : M. Spino
Drilled By: : M. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Dark yellowish brown, wet, very loose, fine to medium SAND, with some silt, trace clay (10 YR 4/6, Sandy loam)		SM	1	1-1-1-1	Scale 1" ~ 6.2 feet
2	Light yellowish brown, wet, very loose, fine to coarse SAND, with trace silt (10 YR 6/4, Sand)		SP	2	1-1-2-2	No organic bearing soil was encountered at the ground surface.
4				3	1-2-2-2	Groundwater was encountered at 6 feet during drilling operations.
6	Very pale brown, wet to saturated, loose, fine to coarse SAND, with trace silt (10 YR 7/3, Sand)		SP	4	2-2-3-3	At completion water was at 4 feet; boring caved in at 5.5 feet.
8				5	2-4-4-5	Laboratory Test Results
10				6	2-3-4-5	Sample No. 10 From 18 to 20 feet
12	Light gray, saturated, very loose to loose, fine to coarse SAND, with trace silt (10 YR 7/2, Sand)		SP	7	2-2-2-3	Sieve Analysis
14				8	2-2-3-3	Sieve Size / Passing % 3/8" 100 No. 4 99.7 No. 10 98.1 No. 20 97.1 No. 40 93.3 No. 60 88.3 No. 100 83.1 No. 200 78.6
16				9	1-1-2-2	
18	Light gray, saturated, very soft, silty CLAY, with trace fine to medium sand (10 YR 7/1, Silty clay)		CL	10	1-1-1-1	Natural Moisture = 25.9%
20	Boring terminated at 20 feet.					
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HYNES & ASSOCIATES

LOG OF BORING B-27

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : October 10, 2016
Logged By: : J. Lindsey
Drilled By: : M. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0–2	Brown, wet, very loose, fine to medium SAND, with trace silt (10 YR 5/3, Sand)		SP	1	1-1-1-2	Scale 1" ~ 6.2 feet Approximately 2 inches of organic bearing soil was encountered at the ground surface. Groundwater was encountered at 7 feet during drilling operations. At completion water was at 5.5 feet; boring caved in at 6.5 feet. Laboratory Test Results Sample No. 7 From 12 to 14 feet Sieve Analysis Sieve Size / Passing % No. 10 100 No. 20 99.9 No. 40 98.9 No. 60 58.3 No. 100 13.5 No. 200 8.5 Natural Moisture = 32.0%
2–4				2	1-1-2-1	
4–6	Pale brown, wet, very loose, fine to medium SAND, with trace silt (10 YR 6/3, Sand)		SP	3	1-2-2-2	
6–8	Light gray, saturated, very loose, fine to medium SAND, with trace silt (10 YR 7/2, Sand)		SP	4	1-2-2-3	
8–10				5	1-2-2-3	
10–12				6	1-2-3-4	
12–14				7	1-2-2-3	
14–16				8	2-2-3-3	
16–18	Brown, saturated, very loose, fine to medium SAND, with little silt (10 YR 5/3, Loamy sand)		SP-SM	9	2-2-3-5	
18–20	Yellowish brown, saturated, very loose, fine to medium SAND, with trace silt (10 YR 5/4, Sand)		SP	10	1-2-3-3	
20	Boring terminated at 20 feet.					
22–42						

HYNES & ASSOCIATES

LOG OF BORING B-28

(Page 1 of 1)

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : October 11, 2016
Logged By: : M. Spino
Drilled By: : M. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Yellowish brown, wet, very loose, fine to coarse SAND, with some silt, trace clay (10 YR 5/6, Sandy loam)		SM	1	1-2-2-2	Scale 1" ~ 6.2 feet
2	Yellowish brown, wet, very loose, fine to coarse SAND, with little silt, trace clay (10 YR 5/4, Loamy sand)		SP-SM	2	5-3-2-3	No organic bearing soil was encountered at the ground surface.
4	Yellow, wet to satruated, very loose, fine to coarse SAND, with trace silt (10 YR 7/4, Sand)		SP	3	1-2-2-3	Groundwater was encountered at 6 feet during drilling operations.
6	Brownish yellow, saturated, loose, fine to coarse SAND, with trace silt (10 YR 6/8, Sand)		SP	4	2-3-3-3	At completion water was at 6feet; boring caved in at 7.5 feet.
8	Yellow, saturated, very loose to loose, fine to coarse SAND, with trace silt (10 YR 7/8, Sand)		SP	5	1-1-2-3	Laboratory Test Results
10				6	2-3-4-4	Sample No. 3 From 4 to 6 feet
12	White, saturated, loose, fine to medium SAND, with trace to little silt (10 YR 8/1, Loamy sand)		SP-SM	7	2-2-3-3	Sieve Analysis
14	Very pale brown, saturated, very loose to loose, fine to coarse SAND, with trace silt (10 YR 7/3, Sand)		SP	8	1-4-3-4	Sieve Size / Passing % 3/8" 100 No. 4 99.7 No. 10 97.3 No. 20 89.5 No. 40 56.1 No. 60 22.9 No. 100 11.4 No. 200 8.6
16				9	1-1-2-3	
18				10	1-2-4-3	
20	Boring terminated at 20 feet.					Natural Moisture = 16.8%
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HYNES & ASSOCIATES

LOG OF BORING B-29

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : October 10, 2016
Logged By: : J. Lindsey
Drilled By: : M. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Brown, wet, very loose, fine to medium SAND, with trace silt (10 YR 5/3, Sand)		SP	1	1-1-1-1	Scale 1" ~ 6.2 feet
2	Brown, wet, very loose, fine to medium SAND, with little silt, trace clay (10 YR 5/3, Loamy sand)		SP-SM	2	1-1-1-2	Approximately 2 inches of organic bearing soil was encountered at the ground surface.
4	Very pale brown, wet, very loose, fine to medium SAND, with trace silt (10 YR 7/3, Sand)		SP	3	2-2-2-3	Groundwater was encountered at 7 feet during drilling operations.
6	Brownish yellow, saturated, very loose, fine to medium SAND, with trace silt (10 YR 6/6, Sand)		SP	4	1-1-2-2	At completion water was at 7.5feet; boring caved in at 8 feet.
8	Light yellowish brown, saturated, very loose, fine to medium SAND, with trace silt (10 YR 6/4, Sand)		SP	5	1-1-1-2	Laboratory Test Results
10				6	2-2-2-3	Sample No. 4 From 6 to 8 feet
12				7	1-2-2-3	Sieve Analysis
14				8	1-1-2-2	Sieve Size / Passing % No. 4 100 No. 10 99.6 No. 20 98.3 No. 40 91.8 No. 60 46.8 No. 100 16.8 No. 200 10.6
16	Pale brown, saturated, loose, fine to coarse SAND, with trace silt (10 YR 6/3, Sand)		SP	9	3-3-4-5	
18				10	1-2-4-4	Natural Moisture = 23.3%
20	Boring terminated at 20 feet.					
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LOG OF BORING B-30

(Page 1 of 1)

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : October 11, 2016
Logged By: : M. Spino
Drilled By: : M. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Yellowish brown, wet, very loose, fine to coarse SAND, with some silt, trace clay (10 YR 5/6, Sandy loam)		SM	1	1-2-2-2	Scale 1" ~ 6.2 feet
2				2	2-1-1-2	No organic bearing soil was encountered at the ground surface.
4	Brownish yellow, wet, very loose, fine to medium SAND, with trace silt (10 YR 6/6, Sand)		SP	3	3-2-2-2	Groundwater was encountered at 6 feet during drilling operations.
6	Light yellowish brown, saturated, very loose, fine to coarse SAND, with trace silt (10 YR 6/4, Sand)			4	1-2-2-3	At completion water was at 6 feet; boring caved in at 6.5 feet.
8				5	2-1-2-2	Laboratory Test Results
10			SP	6	1-3-4-5	Sample No. 10 From 18 to 20 feet
12				7	2-3-3-4	Sieve Analysis
14	Very pale brown, saturated, loose, fine to coarse SAND, with trace silt (10 YR 8/3, Sand)		SP	8	3-4-5-5	Sieve Size / Passing %
16	Brownish yellow, saturated, medium dense, fine to coarse SAND, with trace silt (10 YR 6/6, Sand)			9	4-6-5-6	3/8" 100 No. 4 99.4 No. 10 95.8 No. 20 78.3 No. 40 38.9 No. 60 16.3 No. 100 10.4 No. 200 7.7
18			SP	10	3-4-5-5	
20	Boring terminated at 20 feet.					Natural Moisture = 14.2%
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HYNES & ASSOCIATES

LOG OF BORING MW-12

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : October 10, 2016
Logged By: : M. Spino
Drilled By: : M. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Light yellowish brown, wet, loose, fine to medium SAND, with little silt (10 YR 6/4, Loamy sand)		SP-SM	1	2-4-4-3	Scale 1" ~ 6.2 feet
2	Strong brown, wet, very loose, fine to medium SAND, with some silt, trace clay (10 YR 5/6, Sandy loam)		SM	2	3-1-1-2	No organic bearing soil was encountered at the ground surface.
4	Yellowish brown, wet to saturated, loose, fine to medium SAND, with some silt, trace clay (10 YR 5/6, Sandy loam)		SM	3	2-3-3-3	Groundwater was encountered at 6 feet during drilling operations.
6	Very pale brown, saturated, very loose to loose, fine to coarse SAND, with trace silt, trace fine gravel (10 YR 7/3, Sand)		SP	4	1-2-2-3	Laboratory Test Results
8				5	1-2-3-3	Sample No. 8 From 14 to 16 feet
10				6	1-2-3-5	Sieve Analysis
12				7	2-2-3-4	Sieve Size / Passing %
14				8	2-3-5-5	1" 100 3/4" 93.6 1/2" 91.2
16				9	2-3-5-5	3/8" 91.2 No. 4 90.6 No. 10 89.7
18				10	2-3-3-5	No. 20 83.2 No. 40 40.2 No. 60 15.3
20	Boring terminated at 20 feet.					No. 100 11.2 No. 200 8.5 Natural Moisture = 16.5%
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HYNES & ASSOCIATES

LOG OF BORING MW-13

(Page 1 of 1)

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : October 10, 2016
Logged By: : M. Spino
Drilled By: : M. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Light yellowish brown, wet, very loose, fine to medium SAND, with little silt (10 YR 6/6, Loamy sand)		SP-SM	1	1-2-2-2	Scale 1" ~ 6.2 feet
2				2	2-1-1-1	No organic bearing soil was encountered at the ground surface.
4	Brownish yellow, wet to saturated, very loose, fine to medium SAND, with trace silt (10 YR 6/6, Sand)		SP	3	1-1-1-2	Groundwater was encountered at 6 feet during drilling operations.
6	Pale brown, saturated, loose, fine to coarse SAND, with trace silt (10 YR 6/3, Sand)		SP	4	2-2-3-4	Laboratory Test Results
8	Very pale brown, saturated, loose, fine to medium SAND, with trace to little silt (10 YR 7/3, Sand)		SP	5	1-2-3-3	Sample No. 6 From 10 to 12 feet
10				6	2-3-3-3	Sieve Analysis
12				7	1-2-3-4	Sieve Size / Passing % No. 4 100 No. 10 99.8 No. 20 97.2 No. 40 67.0 No. 60 31.5 No. 100 15.5 No. 200 11.4
14	Reddish yellow, saturated, loose, fine to medium SAND, with some silt, trace clay (7.5 YR 6/8, Sandy loam)		SM	8	1-2-3-5	
16	Very pale brown, saturated, loose, fine to medium SAND, with trace to little silt (10 YR 7/3, Loamy sand)		SP-SM	9	2-2-3-4	
18	Very pale brown, saturated, loose, fine to coarse SAND, with trace silt (10 YR 7/4, Sand)		SP	10	2-3-4-5	
20	Boring terminated at 20 feet.					Natural Moisture = 18.2%
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LOG OF BORING MW-14

(Page 1 of 1)

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : September 28, 2016
Logged By: : C. Johnston
Drilled By: : M. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Yellowish brown, wet, very loose, fine to medium SAND, with little silt (10 YR 5/4, Sandy loam)		SM	1	1-1-1-1	Scale 1" ~ 6.2 feet
2	Yellowish brown, wet, loose, fine to medium SAND, with little silt, trace clay (10 YR 5/4, Sandy loam)		SM	2	3-4-3-3	Approximately 1 inch of organic bearing soil was encountered at the ground surface.
4	Yellow, wet, loose, fine to medium SAND, with some silt, trace clay (10 YR 7/8, Sandy loam)		SM	3	4-5-5-5	Groundwater was encountered at 11 feet during drilling operations.
6	Reddish yellow, loose, fine to medium SAND, with some silt (7.5 YR 6/6, Sandy loam)		SM	4	5-4-3-3	Laboratory Test Results
8	Yellow, wet, very loose, fine to medium SAND, with some silt (10 YR 7/6, Sandy loam)		SM	5	2-1-1-1	Sample No. 9 From 16 to 18 feet
10	Very pale brown, wet to saturated, very loose, fine to medium SAND, with some silt (10 YR 7/4, Sandy loam)		SM	6	1-1-1-2	Sieve Analysis
12	Very pale brown, saturated, loose, fine to medium SAND, with some silt, trace clay (10 YR 7/4, Sandy loam)		SM	7	2-2-3-3	Sieve Size / Passing % No. 4 100 No. 10 99.9 No. 20 94.8 No. 40 59.4 No. 60 28.7 No. 100 15.0 No. 200 10.0
14				8	2-2-4-4	
16	Yellow-brown, saturated, medium dense, fine to medium SAND, with trace to little silt (10 YR 5/6, Loamy sand)		SP-SM	9	3-4-6-6	
18	Yellow-brown, saturated, loose, fine to medium SAND, with trace to little silt (10 YR 5/6, Loamy sand)		SP-SM	10	4-4-5-5	
20	Boring terminated at 20 feet.					Natural Moisture = 25.8%
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LOG OF BORING MW-15

(Page 1 of 1)

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : September 15, 2016
Logged By: : C. Johnston
Drilled By: : M. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Light brownish gray, wet, very loose, fine to medium SAND, with trace to little silt (10 YR 6/2, Sand)		SP	1	1-1-1-1	Scale 1" ~ 6.2 feet
2	Grayish brown, wet, loose, fine to medium SAND, with some silt, trace clay (10 YR 5/2, Loamy sand)		SM	2	4-4-4-5	Approximately 2 inches of organic bearing soil was encountered at the ground surface.
4	Very pale brown, wet, loose, fine to medium SAND, with some silt (10 YR 7/3, Sand)		SP	3	3-4-4-3	Groundwater was encountered at 9 feet during drilling operations.
6				4	2-2-3-3	Laboratory Test Results
8	Light gray, wet to saturated, medium stiff, silty CLAY, with little fine to medium sand (mottled) (10 YR 7/2, Silty clay loam)		CL	5	2-2-3-3	Sample No. 9 From 16 to 18 feet
10	Light brownish gray, saturated, loose, fine to medium SAND, with little to some silt (10 YR 6/2, Sandy loam)		SM	6	3-4-4-4	Sieve Analysis
12	Very pale brown, saturated, loose, fine to medium SAND, with little to some silt (10 YR 7/3, Sandy loam)		SM	7	1-2-3-4	Sieve Size / Passing %
14	Very pale brown, saturated, loose, fine to coarse SAND, with trace silt (10 YR 7/3, Sand)		SP	8	5-5-4-4	3/8" 100 No. 4 99.3 No. 10 98.7 No. 20 87.0 No. 40 44.5 No. 60 25.8 No. 100 15.7 No. 200 8.1
16	Very pale brown, saturated, loose, fine to coarse SAND, with trace silt (10 YR 8/3, Sand)		SP	9	4-4-4-4	
18	Strong brown, saturated, medium dense, fine to coarse SAND, with trace silt (7.5 YR 5/6, Sand)		SP	10	2-5-8-8	Natural Moisture = 19.4%
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26	Boring terminated at 20 feet.					
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LOG OF BORING MW-16

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : September 15, 2016
Logged By: : C. Johnston
Drilled By: : M. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 26 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Light gray, wet, very loose, fine to medium SAND, with trace silt (10 YR 7/2, Sand)		SP	1	1-1-1-1	Scale 1" ~ 6.2 feet
2	Pale brown, wet, very loose, fine to medium SAND, with trace silt (10 YR 6/3, Sand)		SP	2	2-2-1-1	Approximately 1 inch of organic bearing soil was encountered at the ground surface.
4	Very pale brown, wet, very loose, fine to medium SAND, with trace silt (10 YR 7/3, Sand)		SP	3	1-1-1-1	Groundwater was encountered at 17 feet during drilling operations.
6	Yellowish brown, wet, medium dense, fine to medium SAND, with little to some silt, trace clay (10 YR 5/4, Sandy loam)		SM	4	2-4-6-7	Laboratory Test Results
8	Very pale brown, wet, loose, fine to medium SAND, with trace silt (10 YR 7/3, Sand)		SP	5	3-4-4-3	Sample No. 6 From 10 to 12 feet
10	Light gray, wet, medium stiff, silty CLAY, with trace fine to medium sand (10 YR 7/2, Silty clay loam)		CL	6	2-2-4-5	Atterberg Limits
12	Light brownish gray, wet, medium stiff, clayey SILT, with trace fine to medium sand (10 YR 6/2, Silt loam)		ML	7	3-3-3-3	Liquid Limit = 46 Plasticity Index = 22 Natural Moisture = 20.9%
14	Light brown, wet, stiff, clayey SILT, with trace fine to medium sand (7.5 YR 6/4, Silt loam)		ML	8	2-4-7-8	
16	Light yellowish brown, wet to saturated, medium dense, fine to medium SAND, with little to some silt (10 YR 6/4, Sandy loam)		SM	9	4-6-6-7	Sample No. 6 From 10 to 12 feet
18				10	6-9-11-12	Sieve Analysis
20	Very pale brown, saturated, medium dense, fine to medium SAND, with trace to little silt, (10 YR 7/4, Loamy sand)		SP-SM	11	3-4-7-8	Sieve Size / Passing % No. 10 100 No. 20 99.9 No. 40 99.4 No. 60 95.6 No. 100 85.9 No. 200 51.1
22	Brownish yellow, saturated, loose, fine to medium SAND, with little to some silt (10 YR 6/6, Sandy loam)		SM	12	2-3-3-3	
24				13	2-2-3-3	Natural Moisture = 17.0%
26	Boring terminated at 26 feet.					Sample No. 13 From 24 to 26 feet
28						Sieve Analysis
30						Sieve Size / Passing % No. 4 100 No. 10 99.9 No. 20 99.3 No. 40 89.4 No. 60 37.9 No. 100 13.3 No. 200 8.2
32						
34						
36						
38						Natural Moisture = 22.6%
40						
42						

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LOG OF BORING MW-17

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : September 28, 2016
Logged By: : C. Johnston
Drilled By: : M. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 26 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Brownish yellow, wet, very loose, fine to medium SAND, with trace silt (10 YR 6/6, Sand)		SP	1	1-1-1-1	Scale 1" ~ 6.2 feet
2	Pale brown, wet, very loose, fine to medium SAND, with trace silt (10 YR 6/3, Sand)		SP	2	6-3-2-2	Approximately 2 inches of organic bearing soil was encountered at the ground surface.
4				3	6-3-3-2	Groundwater was encountered at 15 feet during drilling operations.
6	Pale brown, wet, loose, fine to medium SAND, with trace silt (10 YR 6/3, Sand)		SP	4	2-2-3-4	Laboratory Test Results
8	Very pale brown, wet, medium dense, fine to medium SAND, with trace silt (10 YR 7/3, Sand)		SP	5	5-6-6-7	Sample No. 8 From 14 to 16 feet
10	Very pale brown, wet, medium dense, fine to medium SAND, with some silt, trace clay (10 YR 8/3,Sandy loam)		SM	6	6-9-10-10	Atterberg Limits Liquid Limit = 36 Plasticity Index = 18
12	Very pale brown, wet, medium dense, fine to medium SAND, with trace silt (10 YR 8/2, Sand)		SP	7	8-10-12-13	Natural Moisture = 19.4%
14	Light gray, wet to saturated, medium stiff, silty CLAY, with trace fine to medium sand (10 YR 7/1, Silty clay loam)		CL SM	8	4-4-3-3	Sample No. 9 From 16 to 18 feet
16	Very pale brown, wet to saturated, loose, fine to medium SAND, with some silt (10 YR 7/3, Sandy loam)		SP-SM	9	4-5-5-5	Sieve Analysis
18	Light gray, saturated, loose, fine to medium SAND, with trace to little silt (10 YR 7/1, Loamy sand)		SM	10	5-5-4-4	Sieve Size / Passing % No. 10 100 No. 20 95.7 No. 40 70.5 No. 60 35.6 No. 100 19.1 No. 200 12.6
20	Light gray, saturated, loose, fine to medium SAND, with little silt, mottled (10 YR 7/1, Sandy loam)			11	4-4-4-4	
22	Very pale brown, saturated, loose, fine to medium SAND, with some silt (10 YR 7/4, Sandy loam)		SM	12	4-4-4-4	Natural Moisture = 18.6%
24	Brownish yellow, saturated, loose, fine to medium SAND, with trace to little silt (10 YR 6/6, Sand)		SP-SM	13	4-4-5-5	Sample No. 13 From 24 to 26 feet
26	Boring terminated at 26 feet.					Sieve Analysis
28						Sieve Size / Passing % No. 4 100 No. 10 99.9 No. 20 97.9 No. 40 72.9 No. 60 29.0 No. 100 13.3 No. 200 9.1
30						
32						Natural Moisture = 24.0%
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LOG OF BORING MW-18

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : September 26, 2016
Logged By: : C. Johnston
Drilled By: : M. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 22 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches
0	Brown, wet, very loose, fine to medium SAND, with trace silt (10 YR 5/3, Sand)		SP	1	1-1-1-2
2	Yellowish brown, wet, very loose, fine to medium SAND, with some silt, trace clay (10 YR 5/4, Sandy loam)		SM	2	4-2-2-2
4	Brownish yellow, wet, very loose, fine to medium SAND, with trace silt (10 YR 6/6, Sand)		SP	3	3-2-2-2
6	Very pale brown, wet, loose, fine to medium SAND, with some silt, trace clay (10 YR 7/4, Sandy loam)		SM	4	3-3-4-4
8	Very pale brown, wet, medium dense, fine to medium SAND, with trace silt (10 YR 8/2, Sand)		SP	5	2-5-7-7
10	Very pale brown, wet, loose, fine to medium SAND, with little silt, trace clay (10 YR 8/2, Sandy loam)		SM	6	4-3-3-3
12	Light gray, wet, loose, fine to medium SAND, with trace to little silt (10 YR 7/1, Loamy sand)		SP-SM	7	3-3-3-3
14	Very pale brown, wet to saturated, loose, fine to medium SAND, with little silt (10 YR 2/4, Sandy loam)		SM	8	1-2-3-3
16	Brownish yellow, saturated, loose, fine to medium SAND, with trace silt (10 YR 6/6, Sand)		SP	9	2-3-3-3
18	Very pale brown, saturated, loose, fine to medium SAND, with trace silt (10 YR 7/3, Sand)		SP	10	2-3-3-4
20				11	2-2-3-3
22	Boring terminated at 22 feet.				
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Remarks

Scale 1" ~ 6.2 feet

Approximately 2 inches of organic bearing soil was encountered at the ground surface.

Groundwater was encountered at 15 feet during drilling operations.

Laboratory Test Results

Sample No. 7
From 12 to 14 feet

Sieve Analysis

Sieve Size	Passing %
No. 4	100
No. 10	99.6
No. 20	98.9
No. 40	82.0
No. 60	27.3
No. 100	15.4
No. 200	10.9

Natural Moisture = 23.2%

Sample No. 9
From 16 to 18 feet

Sieve Analysis

Sieve Size	Passing %
No. 4	100
No. 10	99.6
No. 20	97.9
No. 40	82.1
No. 60	35.0
No. 100	15.9
No. 200	10.7

Natural Moisture = 22.7%

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LOG OF BORING MW-19

(Page 1 of 1)

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : September 23, 2016
Logged By: : C. Johnston
Drilled By: : M. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 26 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Yellowish brown, wet, very loose, fine to medium SAND, with trace silt (10 YR 5/4, Sand)		SP	1	1-2-2-2	Scale 1" ~ 6.2 feet
2	Dark yellowish brown, wet, very loose, fine to medium SAND, with trace silt (10 YR 4/4, Sand)		SP	2	8-2-2-3	Approximately 2 inches of organic bearing soil was encountered at the ground surface.
4	Light yellowish brown, wet, very loose, fine to medium SAND, with trace silt (10 YR 6/4, Sand)		SP	3	8-2-2-3	Groundwater was encountered at 15 feet during drilling operations.
6	Light yellowish brown, wet, loose, fine to medium SAND, with trace silt (10 YR 6/4, Sand)		SP	4	8-3-5-5	Laboratory Test Results
8	Light yellowish brown, wet, medium dense, fine to medium SAND, with trace silt (10 YR 6/4, Sand)		SP	5	14-8-7-7	Sample No. 8 From 14 to 16 feet
10	Very pale brown, wet, medium dense, fine to medium SAND, with some silt (10 YR 8/2, Sandy loam)		SM	6	13-7-6-6	Sieve Analysis
12	Yellow, wet, very loose, fine to medium SAND, with trace silt (10 YR 7/6, Sand)		SP	7	3-3-3-2	Sieve Size / Passing % No. 4 100 No. 10 99.9 No. 20 93.2 No. 40 64.1 No. 60 22.9 No. 100 11.0 No. 200 7.9
14	Yellow, wet to saturated, loose, fine to coarse SAND, with trace silt (10 YR 7/6, Sand)		SP	8	1-3-3-3	
16	Very pale brown, saturated, loose, fine to medium SAND, with trace to little silt (10 YR 7/3, Loamy sand)		SP-SM	9	2-3-3-4	
18	Yellow, saturated, loose, fine to medium SAND, with little to some silt (10 YR 7/6, Sand)		SP	10	3-3-4-5	
20	Very pale brown, saturated, loose, fine to medium SAND, with little silt (10 YR 7/4, Loamy sand)			11	3-4-4-5	Natural Moisture = 26.0%
22			SP-SM	12	2-3-4-5	Sample No. 12 From 22 to 24 feet
24				13	1-3-4-5	Sieve Analysis
26	Boring terminated at 26 feet.					Sieve Size / Passing % 3/8" 100 No. 4 99.9 No. 10 99.7 No. 20 97.0 No. 40 86.4 No. 60 51.6 No. 100 18.9 No. 200 12.5
28						Natural Moisture = 20.9%
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LOG OF BORING MW-20

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : October 5, 2016
Logged By: : M. Spino
Drilled By: : M. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Light yellowish brown, wet, very loose, fine to medium SAND, with trace to little silt (10 YR 6/4, Loamy sand)		SP-SM	1	1-1-1-1	Scale 1" ~ 6.2 feet
2	Pale brown, wet, very loose, fine to medium SAND, with trace silt (10 YR 6/3, Sand)		SP	2	2-2-2-2	Approximately 4 inches of organic bearing soil was encountered at the ground surface.
4	Very pale brown, wet, very loose, fine to medium SAND, with little silt, trace clay (10 YR 7/4, Loamy sand)		SP-SM	3	3-2-2-2	Groundwater was encountered at 9 feet during drilling operations.
6	White, wet, very loose, fine to medium SAND, with some silt, trace clay (10 YR 8/1, Sandy loam)		SM	4	2-2-2-2	Laboratory Test Results
8	Yellow, wet to saturated, very loose, fine to coarse SAND, with trace silt (10 YR 7/6, Sand)		SP	5	1-1-1-1	Sample No. 8 From 14 to 16 feet
10	Yellow, saturated, very loose, fine to coarse SAND, with trace to little silt (10 YR 7/6, Loamy sand)		SP-SM	6	1-1-1-2	Sieve Analysis
12				7	1-2-2-3	Sieve Size / Passing % 1/2" 100 3/8" 97.6 No. 4 87.5 No. 10 75.4 No. 20 60.1 No. 40 34.9 No. 60 17.1 No. 100 10.9 No. 200 8.2
14	Light yellowish brown, saturated, very loose, fine to coarse SAND, with trace silt (10 YR 6/4, Sand)		SP	8	1-1-2-2	
16	White, saturated, loose, fine to medium SAND, with trace to little silt (10 YR 8/1, Loamy sand)		SP-SM	9	1-2-4-5	
18				10	1-2-4-4	
20	Boring terminated at 20 feet.					Natural Moisture = 13.2%
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24						
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HYNES & ASSOCIATES

LOG OF BORING MW-21

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : September 15, 2016
Logged By: : C. Johnston
Drilled By: : M. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Very pale brown, wet, very loose, fine to medium SAND, with trace silt (10 YR 7/3, Sand)		SP	1	1-1-2-2	Scale 1" ~ 6.2 feet
2	Yellowish brown, wet, loose, fine to medium SAND, with little to some silt, trace clay (10 YR 5/6, Sandy loam)		SM	2	3-2-4-5	Approximately 3 inches of organic bearing soil was encountered at the ground surface.
4	Brownish yellow, wet, loose, fine to medium SAND, with little silt, trace clay (10 YR 6/6, Sandy loam)		SM	3	5-4-4-4	Groundwater was encountered at 11 feet during drilling operations.
6	Light gray, wet, very loose, fine to medium SAND, with trace silt (10 YR 7/2, Sand)		SP	4	1-2-2-3	Laboratory Test Results
8				5	1-2-2-3	Sample No. 9 From 16 to 18 feet
10	Light gray, wet to saturated, very loose, fine to medium SAND, with some silt (10 YR 7/1, Sandy loam)		SM	6	1-1-2-2	Sieve Analysis
12				7	1-WOH/18"	Sieve Size / Passing %
14				8	1-1-1-3	No. 4 100 No. 10 99.4 No. 20 94.0 No. 40 67.8 No. 60 31.1 No. 100 15.1 No. 200 9.1
16	Light gray, saturated, medium dense, fine to coarse SAND, with trace silt (10 YR 7/2, Sand)		SP	9	4-5-5-7	
18				10	4-4-5-6	Natural Moisture = 21.8%
20	Boring terminated at 20 feet.					
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HYNES & ASSOCIATES

LOG OF BORING MW-22

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : September 23, 2016
Logged By: : C. Johnston
Drilled By: : M. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Yellowish brown, wet, very loose, fine to medium SAND, with some silt (10 YR 5/6, Sandy loam)		SM	1	1-1-1-1	Scale 1" ~ 6.2 feet
2				2	1-1-2-2	Approximately 3 inches of organic bearing soil was encountered at the ground surface.
4	Yellow, wet, very loose, fine to medium SAND, with trace silt (10 YR 7/6, Sand)		SP	3	3-2-2-2	Groundwater was encountered at 11 feet during drilling operations.
6	Very pale brown, wet, very loose, fine to medium SAND, with trace silt (10 YR 8/3, Sand)		SP	4	4-2-2-2	Laboratory Test Results
8	Very pale brown, wet, very loose, fine to medium SAND, with little silt, mottled (10 YR 8/3, Loamy sand)		SP-SM	5	5-2-2-2	Sample No. 5 From 8 to 10 feet
10	Very pale brown, wet to saturated, very loose, fine to medium SAND, with little silt (10 YR 8/3, Sandy loam)		SM	6	4-2-1-1	Sieve Analysis
12	Light gray, saturated, very loose, fine to medium SAND, with trace silt (10 YR 7/1, Sand)		SP	7	1-2-2-1	Sieve Size / Passing % No. 4 100 No. 10 99.4 No. 20 93.4 No. 40 71.5 No. 60 43.7 No. 100 27.2 No. 200 14.4
14				8	2-2-2-2	
16				9	2-2-2-4	
18				10	3-3-3-3	Natural Moisture = 15.6%
20	Boring terminated at 20 feet.					Sample No. 7 From 12 to 14 feet
22						Sieve Analysis
24						Sieve Size / Passing % 1/2" 100 3/8" 99.2 No. 4 99.0 No. 10 98.9 No. 20 93.0 No. 40 50.6 No. 60 21.9 No. 100 13.0 No. 200 9.1
26						
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34						Natural Moisture = 21.0%
36						
38						
40						
42						

HYNES & ASSOCIATES

LOG OF BORING MW-23

(Page 1 of 1)

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : September 16, 2016
Logged By: : C. Johnston
Drilled By: : M. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Very pale brown, wet, very loose, fine to medium SAND, with trace silt (10 YR 7/3, Sand)		SP	1	1-1-2-2	Scale 1" ~ 6.2 feet
2	Brownish yellow, wet, very loose, fine to medium SAND, with trace silt (10 YR 6/6, Sand)		SP	2	2-2-3-3	Approximately 2 inches of organic bearing soil was encountered at the ground surface.
4	Brownish yellow, wet, loose, fine to medium SAND, with trace silt (10 YR 6/6, Sand)		SP	3	6-3-3-5	Groundwater was encountered at 11 feet during drilling operations.
6	Light gray, wet, loose, fine to medium SAND, with trace silt (10 YR 7/1, Sand)		SP	4	2-4-3-6	Laboratory Test Results
8	Gray, wet, medium dense, fine to medium SAND, with little silt, trace clay (10 YR 6/1, Sandy loam)		SM	5	4-3-6-7	Sample No. 7 From 12 to 14 feet
10	Light gray, wet to saturated, medium dense, fine to coarse SAND, with trace silt (10 YR 7/1, Sand)		SP	6	3-7-7-9	Sieve Analysis
12	Very pale brown, saturated, very loose, fine to medium SAND, with trace to little silt (10 YR 7/3, Loamy sand)		SP-SM	7	7-5-2-3	Sieve Size / Passing % 3/8" 100 No. 4 99.8 No. 10 98.1 No. 20 88.6 No. 40 55.6 No. 60 28.1 No. 100 16.3 No. 200 10.2
14	Light gray, saturated, very loose, fine to medium SAND, with trace to little silt (10 YR 7/2, Loamy sand)		SP-SM	8	2-2-2-3	
16	Light gray, saturated, medium dense, fine to coarse SAND, with trace silt (10 YR 7/2, Loamy sand)		SP-SM	9	4-5-5-6	
18	Light gray, saturated, loose, fine to coarse SAND, with trace silt (10 YR 7/2, Sand)		SP	10	3-3-5-5	Natural Moisture = 21.2%
20	Boring terminated at 20 feet.					
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HYNES & ASSOCIATES

LOG OF BORING MW-24

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : September 15, 2016
Logged By: : C. Johnston
Drilled By: : M. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Very pale brown, wet, loose, fine to medium SAND, with trace silt (10 YR 7/4, Sand)		SP	1	1-2-3-4	Scale 1" ~ 6.2 feet
2	Brownish yellow, wet, very loose, fine to medium SAND, with little to some silt (10 YR 6/6, Sandy loam)		SM	2	2-2-2-2	Approximately 3 inches of organic bearing soil was encountered at the ground surface.
4	Very pale brown, wet, loose, fine to medium SAND, with trace silt (10 YR 7/4, Sand)		SP	3	5-4-3-5	Groundwater was encountered at 13 feet during drilling operations.
6	Light yellowish brown, wet, medium dense, fine to medium SAND, with trace silt (10 YR 6/4, Sand)		SP	4	6-7-7-9	Laboratory Test Results
8	Light gray, wet, medium dense, fine to medium SAND, with little silt (10 YR 7/2, Sandy loam)		SM	5	13-7-8-8	Sample No. 9 From 16 to 18 feet
10	Very pale brown, wet, medium dense, fine to medium SAND, with trace silt (10 YR 7/3, Sand)		SP	6	19-8-9-10	Sieve Analysis
12	Brownish yellow, wet to saturated, soft, clayey SILT, with little fine to medium sand (mottled) (10 YR 6/6, Silt loam)		ML	7	13-6-2-2	Sieve Size / Passing % 1/2" 100 3/8" 96.3 No. 4 90.2 No. 10 88.2 No. 20 83.2 No. 40 63.3 No. 60 28.9 No. 100 11.1 No. 200 5.7
14	Light gray, saturated, loose, fine to medium SAND, with some silt, trace clay (10 YR 4/3, Sandy loam)		SM	8	4-3-2-6	
16	Light gray, saturated, medium dense, fine to medium SAND, with trace silt (10 YR 7/2, Sand)		SP	9	6-8-8-10	
18				10	4-1-1-3	
20	Boring terminated at 20 feet.					Natural Moisture = 20.1%
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HYNES & ASSOCIATES

LOG OF BORING MW-25

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : September 16, 2016
Logged By: : C. Johnston
Drilled By: : M. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 20 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Pale brown, wet, loose, fine to medium SAND, with trace silt (10 YR 6/3, Sand)		SP	1	3-4-4-5	Scale 1" ~ 6.2 feet
2				2	7-6-4-4	Approximately 3 inches of organic bearing soil was encountered at the ground surface.
4				3	12-3-3-4	Groundwater was encountered at 11 feet during drilling operations.
6	Very pale brown, wet, loose, fine to medium SAND, with trace silt (10 YR 7/3, Sand)		SP	4	12-4-4-4	Laboratory Test Results
8	Very pale brown, wet, very loose, fine to medium SAND, with trace to little silt (10 YR 8/2, Loamy sand)		SP-SM	5	10-2-2-2	Sample No. 5, From 8 to 10 feet Sieve Analysis Sieve Size / Passing % No. 10 100 No. 20 99.3 No. 40 90.3 No. 60 62.4 No. 100 23.7 No. 200 14.4 Natural Moisture = 16.6%
10	Very pale brown, wet to saturated, very loose, fine to medium SAND, with little silt, trace clay (10 YR 8/2, Sandy loam)		SM	6	6-10-1-3	
12	Very pale brown, saturated, loose, fine to medium SAND, with little silt, trace clay (10 YR 8/2, Sandy loam)		SM	7	1-2-3-4	Sample No. 7, From 12 to 14 feet Sieve Analysis Sieve Size / Passing % No. 4 100 No. 10 99.7 No. 20 95.9 No. 40 81.1 No. 60 62.2 No. 100 35.5 No. 200 21.6 Natural Moisture = 20.1%
14			SP	8	3-3-4-5	
16	Very pale brown, saturated, loose, fine to coarse SAND, with trace silt (10 YR 8/2, Sand)			9	6-7-6-7	Sample No. 9, From 16 to 18 feet Sieve Analysis Sieve Size / Passing % No. 4 100 No. 10 98.6 No. 20 92.5 No. 40 62.3 No. 60 22.0 No. 100 12.8 No. 200 9.5 Natural Moisture = 24.5%
18	Light gray, saturated, medium dense, fine to coarse SAND, with trace silt, trace gravel (10 YR 7/1, Sand)		SP	10	6-5-7-7	
20	Boring terminated at 20 feet.					
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HYNES & ASSOCIATES

LOG OF BORING MW-26

Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Inland Bays Regional Wastewater Facilities

Project No.: JDH-10/16/279

Date Completed: : September 15, 2016
Logged By: : C. Johnston
Drilled By: : M. Hynes
Drilling Method: : HSA (Geoprobe 7822 DT)
Total Depth: : 26 feet

Depth in Feet	DESCRIPTION	GRAPHIC	USCS	Sample No.	Blows per 6 inches	Remarks
0	Light yellowish brown, wet, very loose, fine to medium SAND, with trace silt (10 YR 6/4, Sand)		SP	1	1-1-2-2	Scale 1" ~ 6.2 feet
2	Light yellowish brown, wet, loose, fine to medium SAND, with trace silt (10 YR 6/4, Sand)		SP	2	9-4-4-4	Approximately 2 inches of organic bearing soil was encountered at the ground surface.
4				3	5-4-4-4	Groundwater was encountered at 15 feet during drilling operations.
6	Brownish yellow, wet, loose, fine to medium SAND, with trace to little silt (10 YR 6/6, Loamy sand)		SP-SM	4	7-3-3-3	Laboratory Test Results
8	Light gray, wet, loose, fine to medium SAND, with trace silt (10 YR 7/2, Sand)		SP	5	2-3-4-6	Sample No. 4 From 6 to 8 feet
10				6	5-3-4-6	Sieve Analysis
12	Light gray, wet, medium dense, fine to medium SAND, with trace silt (10 YR 7/1, Sand)		SP	7	5-5-6-6	Sieve Size / Passing % No. 4 100 No. 10 99.4 No. 20 95.9 No. 40 82.2 No. 60 55.5 No. 100 31.8 No. 200 17.1
14	Light gray, wet to saturated, loose, fine to medium SAND, with trace silt (10 YR 7/1, Sand)		SP	8	4-3-4-5	
16	Light gray, saturated, loose, fine to medium SAND, with some silt, trace clay (10 YR 7/2, Sandy loam)		SM	9	1-2-3-7	
18	Very pale brown, saturated, medium dense, fine to coarse SAND, with trace silt (10 YR 7/3, Sand)		SP	10	6-8-9-11	Natural Moisture = 4.0%
20				11	4-7-9-11	Sample No. 13 From 24 to 26 feet
22				12	9-10-10-12	Sieve Analysis
24	Very pale brown, saturated, loose, fine to medium SAND, with little silt (10 YR 7/3, Loamy sand)		SP-SM	13	6-5-4-4	Sieve Size / Passing % 1/2" 100 3/8" 98.6 No. 4 97.4 No. 10 95.4 No. 20 76.9 No. 40 47.2 No. 60 29.1 No. 100 16.4 No. 200 11.9
26	Boring terminated at 26 feet.					Natural Moisture = 20.0%
28						
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42						

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

PHONE: 302-739-9944
FAX: 302-739-7764

STATE OF DELAWARE
DEPARTMENT OF NATURE RESOURCES AND ENVIRONMENTAL CONTROL

WELL COMPLETION REPORT

http://www.dnrec.state.de.us/

WELL COMPLETION REPORT MUST BE RETURNED WITHIN 30 DAYS OF CONSTRUCTION. A WELL FORMATION LOG MUST BE INCLUDED WITH THIS REPORT.

-Authorization Number-

#

ILLEGIBLE OR INCOMPLETE FORMS WIIL BE RETURNED

PLEASE PRINT OR TYPE - USE BLUE OR BLACK INK ONLY

Permit #: 256134 Local ID: MW -12
Tax Map/Parcel #: 234-21.00-151.00
Property Owner: Sussex County, Delaware
Water Well Contractor: Hynes & Associates WC Lic #: 919
Well Driller In Charge During Construction: Michael Hynes

DRILLING / EXCAVATION METHOD

☒ Auger ☐ Bored ☐ Mud Rotary
☐ Driver ☐ Jetted ☐ Air Rotary
☐ Cable Tool ☐ Washed ☐ Reverse Rotary
☐ Other (Specify): _____

Total Depth Of Excavation (Feet BGS): 20
Construction Date: 10/10/2016

CASING INSTALLATION:

	INNER	OUTER (1)	(2)	(3)
Casing Top (Inches AGS):	36			
Casing Bottom (Feet BGS):	10			
Casing Diameter (Inches):	2			
Casing Material:	Sch. 40 PVC			

Gravel Pack Size (#): 2
AGS=Above Ground Surface BGS=Below Ground Surface

SCREEN INSTALLATION:

Screen Top (Feet BGS): 10
Screen Bottom (Feet BGS): 20
Screen Diameter (Inches): 2
Screen Material: Sch. 40 PVC
Screen Slot Size (1000 of an Inch): 0.010"

WELL USE:

☐ Domestic ☐ Industrial ☐ Heat Pump Supply
☐ Irrigation ☐ Public ☐ Heat Pump Recharge
☐ Agricultural ☐ Misc. Public ☐ Closed Loop Heat Pump
☐ Agricultural/Lawn Irrigation
☒ Other (Specify) Monitor Well #12

TYPE OF PERMANENT PUMP INSTALLED:

Pump Manufacturer: _____ Horsepower: _____
Rated Capacity: _____ (GPM) Pump Intake Setting(ft. BGS): _____
Pump Type: ☐ Submersible ☐ Jet ☐ Vertical Turbine Pump
Pump Installed By: _____ ☐ Others Date: _____

Gravel Pack: From: 8 Feet To: 20 Feet
Grout Type: ☐ Bentonite Clay ☐ Cement ☒ Bentonite Clay Plug
Other: _____ From: 6 Feet To: 8 Feet
Type Of ~~Non-Grout~~ Backfill Of Well Annulus: Bentonite Grout
From: 0 Feet To: 6 Feet
Static Water Level: 6 Feet ☒ Below ☐ Above Ground Surface
Pumping Water Level: _____ Feet On (Date): _____
After: _____ Hours Pumping Rate: _____ GPM
Pumping Method /Device: ☐ Airlift ☐ Mechanical (Pump) Other: _____
Was A Geophysical Log Taken? ☐ Yes ☒ No If "Yes", By: _____

WELL HEAD COMPLETION:

Type: ☐ Pitless Adapter ☐ Standard "T"
☐ Well Pit ☐ Pad Mount
☒ Other - Specify: Stick-up Above Grade
Well Head Completed: 18 Inches ☒ Above ☐ Below Ground Surface
Was The Well Tag Attached In Accordance With Current Regulations?
☒ YES ☐ NO If "NO", Please Explain:
MW #12

Site Plan - **If different from original application, *must*** note changes such as distances from well to house, property lines, nearest road, **and all nearby septic systems and central sewer lines** (included suitable plot plan if available).

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT.

Michael O Hynes
Signature - Well Driller in Charge of Well Construction

4026
Well Driller License # Date

White - DNREC • Canary - Contractor • Pink - Owner

Doc No. 40-08/07/01/10 - CRR 1

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901
PHONE: 302-739-9944
FAX: 302-739-7764

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL

WELL COMPLETION REPORT MUST BE RETURNED WITHIN 30 DAYS OF CONSTRUCTION DATE

FORMATION LOG

PAGE 1 OF 1 PAGES

PLEASE PRINT OR TYPE - ILLEGIBLE OR INCOMPLETE FORMS WILL BE RETURNED

PERMIT #: 256134 | LOCAL ID#: MW-12

PROPERTY OWNER: Sussex County, DE

WELL CONTRACTOR: Hydro & Associates | WC LIC #: 919

DESCRIPTION	TOP OF STRATA	BOTTOM OF STRATA
Yellowish brown, fine to medium sand, little to some silt, trace clay	0	6
Very pale brown, fine to coarse sand, trace silt	6	20

COMMENTS:

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT

Michael J. Hynes — 4026 — 11/29/16

Signature of Well Driller in Charge of Construction | WD License # | Date

White - DNREC • Canary - *CONTRACTOR* • *Pink - Owner*

Doc No. 40-08-82-12-11

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

PHONE: 302-739-9944
FAX: 302-739-7764

STATE OF DELAWARE
DEPARTMENT OF NATURE RESOURCES
AND ENVIRONMENTAL CONTROL

WELL COMPLETION REPORT

http://www.dnrec.state.de.us/

WELL COMPLETION REPORT MUST BE RETURNED WITHIN 30 DAYS OF CONSTRUCTION. A WELL FORMATION LOG MUST BE INCLUDED WITH THIS REPORT.

-Authorization Number-

#

ILLEGIBLE OR INCOMPLETE FORMS WIIL BE RETURNED

PLEASE PRINT OR TYPE - USE BLUE OR BLACK INK ONLY

Permit #: 256135 Local ID: _____
Tax Map/Parcel #: 234-21.00-151.00
Property Owner: Sussex County, Delaware
Water Well Contractor: Hynes & Associates WC Lic #: 919
Well Driller In Charge During Construction: Michael Hynes

DRILLING / EXCAVATION METHOD

☒ Auger ☐ Bored ☐ Mud Rotary
☐ Driver ☐ Jetted ☐ Air Rotary
☐ Cable Tool ☐ Washed ☐ Reverse Rotary
☐ Other (Specify): _____

Total Depth Of Excavation (Feet BGS): 20
Construction Date: 10/10/2016

CASING INSTALLATION:

	INNER	OUTER (1)	OUTER (2)	OUTER (3)
Casing Top (Inches AGS):	36			
Casing Bottom (Feet BGS):	10			
Casing Diameter (Inches):	2			
Casing Material:	Sch. 40 PVC			

Gravel Pack Size (#): 2
AGS=Above Ground Surface BGS=Below Ground Surface

SCREEN INSTALLATION:

Screen Top (Feet BGS): 10
Screen Bottom (Feet BGS): 20
Screen Diameter (Inches): 2
Screen Material: Sch. 40 PVC
Screen Slot Size (1000 of an Inch): 0.010"

WELL USE:

☐ Domestic ☐ Industrial ☐ Heat Pump Supply
☐ Irrigation ☐ Public ☐ Heat Pump Recharge
☐ Agricultural ☐ Misc. Public ☐ Closed Loop Heat Pump
☐ Agricultural/Lawn Irrigation
☒ Other (Specify) Monitor Well #13

TYPE OF PERMANENT PUMP INSTALLED:

Pump Manufacturer: _____ Horsepower: _____
Rated Capacity: _____ (GPM) Pump Intake Setting(ft. BGS): _____
Pump Type: ☐ Submersible ☐ Jet ☐ Vertical Turbine Pump
Pump Installed By: _____ ☐ Others Date: _____

Gravel Pack: From: 8 Feet To: 20 Feet
Grout Type: ☐ Bentonite Clay ☐ Cement ☒ Bentonite Clay Plug
Other: _____ From: 6 Feet To: 8 Feet
Type Of ~~Non-Grout~~ Backfill Of Well Annulus: Bentonite Grout
From: 0 Feet To: 6 Feet
Static Water Level: 6 Feet ☒ Below ☐ Above Ground Surface
Pumping Water Level: _____ Feet On (Date): _____
After: _____ Hours Pumping Rate: _____ GPM
Pumping Method /Device: ☐ Airlift ☐ Mechanical (Pump) Other: _____
Was A Geophysical Log Taken? ☐ Yes ☒ No If "Yes", By: _____

WELL HEAD COMPLETION:

Type: ☐ Pitless Adapter ☐ Standard "T"
☐ Well Pit ☐ Pad Mount
☒ Other - Specify: Stick-Up Above Grade
Well Head Completed: 18 Inches ☒ Above ☐ Below Ground Surface
Was The Well Tag Attached In Accordance With Current Regulations?
☒ YES ☐ NO If "NO", Please Explain:
MW #13

Site Plan - **If different from original application, *must*** note changes such as distances from well to house, property lines, nearest road, **and all nearby septic systems and central sewer lines** (included suitable plot plan if available).

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT.

Michael Hynes
Signature - Well Driller in Charge of Well Construction

4026
Well Driller License # Date

White - DNREC • *Canary - Contractor* • *Pink - Owner*

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901
PHONE: 302-739-9944
FAX: 302-739-7764

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL

WELL COMPLETION REPORT MUST BE RETURNED WITHIN 30 DAYS OF CONSTRUCTION DATE

FORMATION LOG

PLEASE PRINT OR TYPE - ILLEGIBLE OR INCOMPLETE FORMS WILL BE RETURNED

PERMIT #: 256 135	LOCAL ID#: MW-13
PROPERTY OWNER: Sussex County, DE	
WELL CONTRACTOR: Hynes & Associates	WC LIC #: 919

DESCRIPTION	TOP OF STRATA	BOTTOM OF STRATA
Yellowish brown, fine to medium sand, trace to little silt	0	6
Pale brown, fine to coarse sand, trace silt	6	14
Reddish yellow, fine to medium sand, some silt, trace clay	14	16
Very pale brown, fine to coarse sand, trace silt	16	20

COMMENTS:

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT

Signature of Well Driller in Charge of Construction	WD License #	Date
Michael D Joyner	4020	11/29/16

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

PHONE: 302-739-9944
FAX: 302-739-7764

STATE OF DELAWARE
DEPARTMENT OF NATURE RESOURCES AND ENVIRONMENTAL CONTROL

WELL COMPLETION REPORT

http://www.dnrec.state.de.us/

WELL COMPLETION REPORT MUST BE RETURNED WITHIN 30 DAYS OF CONSTRUCTION. A WELL FORMATION LOG MUST BE INCLUDED WITH THIS REPORT.

-Authorization Number-

#

ILLEGIBLE OR INCOMPLETE FORMS WILL BE RETURNED

PLEASE PRINT OR TYPE - USE BLUE OR BLACK INK ONLY

Permit #: 255715 Local ID: MW-14
Tax Map/Parcel #: 234-22.00-10.00
Property Owner: Sussex County Delaware
Water Well Contractor: Hynes & Associates WC Lic.#: 919
Well Driller In Charge During Construction: Michael Hynes

DRILLING / EXCAVATION METHOD

☒ Auger ☐ Bored ☐ Mud Rotary
☐ Driver ☐ Jetted ☐ Air Rotary
☐ Cable Tool ☐ Washed ☐ Reverse Rotary
☐ Other (Specify): _____

Total Depth Of Excavation (Feet BGS): 20
Construction Date: 9/28/2016

CASING INSTALLATION:

	INNER	OUTER (1)	(2)	(3)
Casing Top (Inches AGS):	36			
Casing Bottom (Feet BGS):	10			
Casing Diameter (Inches):	2			
Casing Material:	Sch. 40 PVC			

Gravel Pack Size (#): 2
AGS=Above Ground Surface BGS=Below Ground Surface

SCREEN INSTALLATION:

Screen Top (Feet BGS): 10
Screen Bottom (Feet BGS): 20
Screen Diameter (Inches): 2
Screen Material: Sch. 40 PVC
Screen Slot Size (1000 of an Inch): 0.010"

WELL USE:

☐ Domestic ☐ Industrial ☐ Heat Pump Supply
☐ Irrigation ☐ Public ☐ Heat Pump Recharge
☐ Agricultural ☐ Misc. Public ☐ Closed Loop Heat Pump
☐ Agricultural/Lawn Irrigation
☒ Other (Specify) Monitor Well #14

TYPE OF PERMANENT PUMP INSTALLED:

Pump Manufacturer: _____ Horsepower: _____
Rated Capacity: _____ (GPM) Pump Intake Setting(ft. BGS): _____
Pump Type: ☐ Submersible ☐ Jet ☐ Vertical Turbine Pump
Pump Installed By: _____ ☐ Others Date: _____

Gravel Pack: From: 8 Feet To: 20 Feet
Grout Type: ☐ Bentonite Clay ☐ Cement ☒ Bentonite Clay Plug
Other: _____ From: 6 Feet To: 8 Feet
Type Of ~~Non-Grout~~ Backfill Of Well Annulus: Bentonite Grout
From: 0 Feet To: 6 Feet
Static Water Level: 11 Feet ☒ Below ☐ Above Ground Surface
Pumping Water Level: _____ Feet On (Date): _____
After: _____ Hours Pumping Rate: _____ GPM
Pumping Method /Device: ☐ Airlift ☐ Mechanical (Pump) Other: _____
Was A Geophysical Log Taken? ☐ Yes ☒ No If "Yes", By: _____

WELL HEAD COMPLETION:

Type: ☐ Pitless Adapter ☐ Standard "T"
☐ Well Pit ☐ Pad Mount
☒ Other - Specify: Stick-Up Above Grade
Well Head Completed: 18 Inches ☒ Above ☐ Below Ground Surface
Was The Well Tag Attached In Accordance With Current Regulations?
☒ YES ☐ NO If "NO", Please Explain:
MW #14

Site Plan - **If different from original application, *must* note changes such as distances from well to house, property lines, nearest road, and all nearby septic systems and central sewer lines** (included suitable plot plan if available).

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT.

Signature - Well Driller in Charge of Well Construction

4026
Well Driller License # Date

White - DNREC • *Canary - Contractor* • *Pink - Owner*

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901
PHONE: 302-739-9944
FAX:302-739-7764

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL

WELL COMPLETION REPORT MUST BE RETURNED WITHIN 30 DAYS OF CONSTRUCTION DATE

FORMATION LOG

PAGE 1 OF 1 PAGES

PLEASE PRINT OR TYPE – ILLEGIBLE OR INCOMPLETE FORMS WILL BE RETURNED

PERMIT #: 255715	**LOCAL ID#:** MW-14
PROPERTY OWNER: Sussex County, DE	
WELL CONTRACTOR: Hynes & Associates	**WC LIC #:** 919

DESCRIPTION	TOP OF STRATA	BOTTOM OF STRATA
Light Yellowish Brown, fine to medium	0	12
sand, little to some silt		
Very pale Brown, fine to medium		
sand, trace to little silt	12	20

COMMENTS:

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT

Michael J. Hynes — 4026 — 11/29/16

Signature of Well Driller in Charge of Construction | WD License # | Date

White - DNREC • *Canary - CONTRACTOR* • *Pink - Owner*

Doc No. 40-08-82-12-11

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

PHONE: 302-739-9944
FAX: 302-739-7764

STATE OF DELAWARE
DEPARTMENT OF NATURE RESOURCES AND ENVIRONMENTAL CONTROL

WELL COMPLETION REPORT

http://www.dnrec.state.de.us/

WELL COMPLETION REPORT MUST BE RETURNED WITHIN 30 DAYS OF CONSTRUCTION. A WELL FORMATION LOG MUST BE INCLUDED WITH THIS REPORT.

-Authorization Number-

#

ILLEGIBLE OR INCOMPLETE FORMS WIIL BE RETURNED

PLEASE PRINT OR TYPE - USE BLUE OR BLACK INK ONLY

Permit #: 255716 Local ID: MW-15
Tax Map/Parcel #: 234-22.00-10.00
Property Owner: Sussex County, Delaware
Water Well Contractor: Hynes & Assoc. WC Lic #: 919
Well Driller In Charge During Construction: Michael Hynes

DRILLING / EXCAVATION METHOD

☒ Auger ☐ Bored ☐ Mud Rotary
☐ Driver ☐ Jetted ☐ Air Rotary
☐ Cable Tool ☐ Washed ☐ Reverse Rotary
☐ Other (Specify): _____

Total Depth Of Excavation (Feet BGS): 20
Construction Date: 9/15/2016

CASING INSTALLATION:

	INNER	OUTER (1)	(2)	(3)
Casing Top (Inches AGS):	36			
Casing Bottom (Feet BGS):	10			
Casing Diameter (Inches):	2"			
Casing Material:	Sch 40 PVC			

Gravel Pack Size (#): 2
AGS=Above Ground Surface BGS=Below Ground Surface

SCREEN INSTALLATION:

Screen Top (Feet BGS): 10'
Screen Bottom (Feet BGS): 20
Screen Diameter (Inches): 2
Screen Material: Sch 40 PVC
Screen Slot Size (1000 of an Inch): 0.010"

WELL USE:

☐ Domestic ☐ Industrial ☐ Heat Pump Supply
☐ Irrigation ☐ Public ☐ Heat Pump Recharge
☐ Agricultural ☐ Misc. Public ☐ Closed Loop Heat Pump
☐ Agricultural/Lawn Irrigation
☒ Other (Specify) Monitor Well #15

TYPE OF PERMANENT PUMP INSTALLED:

Pump Manufacturer: _____ Horsepower: _____
Rated Capacity: _____ (GPM) Pump Intake Setting(ft. BGS): _____
Pump Type: ☐ Submersible ☐ Jet ☐ Vertical Turbine Pump
Pump Installed By: _____ ☐ Others Date: _____

Gravel Pack: From: 8 Feet To: 20 Feet
Grout Type: ☐ Bentonite Clay ☐ Cement ☒ Bentonite Clay Plug
Other: _____ From: 6 Feet To: 8 Feet
Type Of ~~Non-Grout~~ Backfill Of Well Annulus: Bentonite Grout
From: 0 Feet To: 6 Feet
Static Water Level: 9 Feet ☒ Below ☐ Above Ground Surface
Pumping Water Level: _____ Feet On (Date): _____
After: _____ Hours Pumping Rate: _____ GPM
Pumping Method /Device: ☐ Airlift ☐ Mechanical (Pump) Other: _____
Was A Geophysical Log Taken? ☐ Yes ☒ No If "Yes", By: _____

WELL HEAD COMPLETION:

Type: ☐ Pitless Adapter ☐ Standard "T"
☐ Well Pit ☐ Pad Mount
☒ Other - Specify: Stick-Up Above Grade
Well Head Completed: 18 Inches ☒ Above ☐ Below Ground Surface
Was The Well Tag Attached In Accordance With Current Regulations?
☒ YES ☐ NO If "NO", Please Explain:
MW #15

Site Plan - **If different from original application, *must*** note changes such as distances from well to house, property lines, nearest road, **and all nearby septic systems and central sewer lines** (included suitable plot plan if available).

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT.

Michael Hynes
Signature - Well Driller in Charge of Well Construction

4026 10/14/16
Well Driller License # Date

White - DNREC • *Canary - Contractor* • *Pink - Owner*

Doc No. 40-08/07/01/10 - CRR 1

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901
PHONE: 302-739-9944
FAX: 302-739-7764

STATE OF DELAWARE
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FORMATION LOG

PAGE 1 OF 1 PAGES

PLEASE PRINT OR TYPE - ILLEGIBLE OR INCOMPLETE FORMS WILL BE RETURNED

PERMIT #: 255716 | LOCAL ID#: MW-15

PROPERTY OWNER: Sussex County Delaware

WELL CONTRACTOR: John D Hynes & Associates | WC LIC #: [redacted] 919

DESCRIPTION	TOP OF STRATA	BOTTOM OF STRATA
Light Brownish Gray, Fine to Medium Sand Trace Silt	0	8
Light Gray, Silty Clay with Trace Fine to Medium Sand	8	10
Light Pale Brown, Fine to Medium Sand with Trace to little Silt	10	20
MW#15		

COMMENTS:

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT

Signature of Well Driller in Charge of Construction | WD License # 4026 | Date 10/14/16

White - DNREC • Canary - CONTRACTOR • Pink - Owner

Doc No. 40-08-82-12-11

MAIL TO:

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DIVISION OF WATER RESOURCES
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DOVER, DELAWARE 19901

PHONE: 302-739-9944
FAX: 302-739-7764

STATE OF DELAWARE
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WELL COMPLETION REPORT

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WELL COMPLETION REPORT MUST BE RETURNED WITHIN 30 DAYS OF CONSTRUCTION. A WELL FORMATION LOG MUST BE INCLUDED WITH THIS REPORT.

-Authorization Number-

#

ILLEGIBLE OR INCOMPLETE FORMS WIIL BE RETURNED

PLEASE PRINT OR TYPE - USE BLUE OR BLACK INK ONLY

Permit #: 255717 Local ID: MW-16
Tax Map/Parcel #: 234-22.00-10.00
Property Owner: Sussex County, Delaware
Water Well Contractor: Hynes & Assoc, WC Lic #: 919
Well Driller In Charge During Construction: Michael Hynes

DRILLING / EXCAVATION METHOD

☐Auger ☐Bored ☐Mud Rotary
☐Driver ☐Jetted ☐Air Rotary
☐Cable Tool ☐Washed ☐Reverse Rotary
☐Other (Specify): _____

Total Depth Of Excavation (Feet BGS): 26
Construction Date: 9/15/2016

CASING INSTALLATION:

	INNER	OUTER (1)	OUTER (2)	OUTER (3)
Casing Top (Inches AGS):	36			
Casing Bottom (Feet BGS):	16			
Casing Diameter (Inches):	2			
Casing Material:	Sch 40 PVC			

Gravel Pack Size (#): 2
AGS=Above Ground Surface BGS=Below Ground Surface

SCREEN INSTALLATION:

Screen Top (Feet BGS): 16'
Screen Bottom (Feet BGS): 26'
Screen Diameter (Inches): 2
Screen Material: Sch 40 PVC
Screen Slot Size (1000 of an Inch): 0.010"

WELL USE:

☐ Domestic ☐ Industrial ☐ Heat Pump Supply
☐ Irrigation ☐ Public ☐ Heat Pump Recharge
☐ Agricultural ☐ Misc. Public ☐ Closed Loop Heat Pump
☐ Agricultural/Lawn Irrigation
☒ Other (Specify) Monitoring Well MW #16

TYPE OF PERMANENT PUMP INSTALLED:

Pump Manufacturer: _____ Horsepower: _____
Rated Capacity: _____ (GPM) Pump Intake Setting(ft. BGS): _____
Pump Type: ☐ Submersible ☐ Jet ☐ Vertical Turbine Pump
Pump Installed By: _____ ☐ Others Date: _____

Gravel Pack: From: 14 Feet To: 26 Feet
Grout Type: ☐ Bentonite Clay ☐ Cement ☒ Bentonite Clay Plug
Other: _____ From: 12 Feet To: 14 Feet
Type Of Non-Grout Backfill Of Well Annulus: Bentonite Grout
From: 0 Feet To: 12 Feet
Static Water Level: 17 Feet ☒ Below ☐ Above Ground Surface
Pumping Water Level: _____ Feet On (Date): _____
After: _____ Hours Pumping Rate: _____ GPM
Pumping Method /Device: ☐ Airlift ☐ Mechanical (Pump) Other: _____
Was A Geophysical Log Taken? ☐ Yes ☒ No If "Yes", By: _____

WELL HEAD COMPLETION:

Type: ☐ Pitless Adapter ☐ Standard "T"
☐ Well Pit ☐ Pad Mount
☒ Other - Specify: Stick-Up Above Grade
Well Head Completed: 18 Inches ☒ Above ☐ Below Ground Surface
Was The Well Tag Attached In Accordance With Current Regulations?
☒ YES ☐ NO If "NO", Please Explain:
MW #16

Site Plan - **If different from original application, *must*** note changes such as distances from well to house, property lines, nearest road, **and all nearby septic systems and central sewer lines** (included suitable plot plan if available).

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT.

Signature - Well Driller in Charge of Well Construction

4076 — Well Driller License #
10/14/16 — Date

White - DNREC • Canary - Contractor • Pink - Owner

Doc No. 40-08/07/01/10 - CRR 1

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901
PHONE: 302-739-9944
FAX: 302-739-7764

STATE OF DELAWARE
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FORMATION LOG

PAGE 1 OF 1 PAGES

PLEASE PRINT OR TYPE - ILLEGIBLE OR INCOMPLETE FORMS WILL BE RETURNED

PERMIT #: 25577 | LOCAL ID#: MW-16

PROPERTY OWNER: Sussex County, DE

WELL CONTRACTOR: Hydro Associates | WC LIC #: 919

DESCRIPTION	TOP OF STRATA	BOTTOM OF STRATA
Light Pale Brown, Fine to Medium Sand with Trace to Little Silt	0	10
Light Gray, Silty Clay with Trace Fine to Medium Sand	10	16
Light Brown, Fine to Medium Sand with Trace Silt	16	26
MW#16		

COMMENTS:

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT

Michael J. Hynes — 4026 — 11/29/16

Signature of Well Driller in Charge of Construction | WD License # | Date

White - DNREC • Canary - *CONTRACTOR* • *Pink - Owner*

Doc No. 40-08-82-12-11

MAIL TO:

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FAX: 302-739-7764

STATE OF DELAWARE
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WELL COMPLETION REPORT

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-Authorization Number-

#

ILLEGIBLE OR INCOMPLETE FORMS WIIL BE RETURNED

PLEASE PRINT OR TYPE - USE BLUE OR BLACK INK ONLY

Permit #: 255718 Local ID: MW - 17
Tax Map/Parcel #: 234-22.00-10.00
Property Owner: Sussex County, Delaware
Water Well Contractor: Hynes & Associates WC Lic.#: 919
Well Driller In Charge During Construction: Michael Hynes

DRILLING / EXCAVATION METHOD

☒ Auger ☐ Bored ☐ Mud Rotary
☐ Driver ☐ Jetted ☐ Air Rotary
☐ Cable Tool ☐ Washed ☐ Reverse Rotary
☐ Other (Specify): _____

Total Depth Of Excavation (Feet BGS): 26
Construction Date: 9/28/2016

CASING INSTALLATION:

	INNER	OUTER (1)	OUTER (2)	OUTER (3)
Casing Top (Inches AGS):	36			
Casing Bottom (Feet BGS):	16			
Casing Diameter (Inches):	2			
Casing Material:	Sch. 40 PVC			

Gravel Pack Size (#): 2
AGS=Above Ground Surface BGS=Below Ground Surface

SCREEN INSTALLATION:

Screen Top (Feet BGS): 16
Screen Bottom (Feet BGS): 26
Screen Diameter (Inches): 2
Screen Material: Sch. 40 PVC
Screen Slot Size (1000 of an Inch): 0.010

WELL USE:

☐ Domestic ☐ Industrial ☐ Heat Pump Supply
☐ Irrigation ☐ Public ☐ Heat Pump Recharge
☐ Agricultural ☐ Misc. Public ☐ Closed Loop Heat Pump
☐ Agricultural/Lawn Irrigation
☒ Other (Specify) Monitor Well #17

TYPE OF PERMANENT PUMP INSTALLED:

Pump Manufacturer: _____ Horsepower: _____
Rated Capacity: _____ (GPM) Pump Intake Setting(ft. BGS): _____
Pump Type: ☐ Submersible ☐ Jet ☐ Vertical Turbine Pump
Pump Installed By: _____ ☐ Others Date: _____

Gravel Pack: From: 14 Feet To: 26 Feet
Grout Type: ☐ Bentonite Clay ☐ Cement ☒ Bentonite Clay Plug
Other: _____ From: 12 Feet To: 14 Feet
Type Of Non-Grout Backfill Of Well Annulus: Bentonite Grout
From: 0 Feet To: 12 Feet
Static Water Level: 16 Feet ☒ Below ☐ Above Ground Surface
Pumping Water Level: _____ Feet On (Date): _____
After: _____ Hours Pumping Rate: _____ GPM
Pumping Method /Device: ☐ Airlift ☐ Mechanical (Pump) Other: _____
Was A Geophysical Log Taken? ☐ Yes ☒ No If "Yes", By: _____

WELL HEAD COMPLETION:

Type: ☐ Pitless Adapter ☐ Standard "T"
☐ Well Pit ☐ Pad Mount
☒ Other - Specify: Stick-Up Above Grade
Well Head Completed: 18 Inches ☒ Above ☐ Below Ground Surface
Was The Well Tag Attached In Accordance With Current Regulations?
☒ YES ☐ NO If "NO", Please Explain:
MW #17

Site Plan - **If different from original application, *must*** note changes such as distances from well to house, property lines, nearest road, **and all nearby septic systems and central sewer lines** (included suitable plot plan if available).

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT.

Michael J. Hynes
Signature - Well Driller in Charge of Well Construction

4026
Well Driller License # Date

White - DNREC • *Canary - Contractor* • *Pink - Owner*

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901
PHONE: 302-739-9944
FAX:302-739-7764

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL

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FORMATION LOG

PAGE 1 OF 1 PAGES

PLEASE PRINT OR TYPE – ILLEGIBLE OR INCOMPLETE FORMS WILL BE RETURNED

PERMIT #: 255718	**LOCAL ID#:** MW-17
PROPERTY OWNER: Sussex County, DE	
WELL CONTRACTOR: Hynes & Associates	**WC LIC #:** 919

DESCRIPTION	TOP OF STRATA	BOTTOM OF STRATA
Brownish yellow, fine to medium sand, trace to some silt	0	14
Light gray, silty clay, trace fine to medium sand	14	15
Light gray, fine to medium sand, trace to some silt	15	26

COMMENTS:

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT

Michael D. Hynes — 4026 — 11/29/16

Signature of Well Driller in Charge of Construction | WD License # | Date

White - DNREC • Canary - CONTRACTOR • Pink - Owner

Doc No. 40-08-82-12-11

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

PHONE: 302-739-9944
FAX: 302-739-7764

STATE OF DELAWARE
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WELL COMPLETION REPORT

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-Authorization Number-

#

ILLEGIBLE OR INCOMPLETE FORMS WIIL BE RETURNED

PLEASE PRINT OR TYPE - USE BLUE OR BLACK INK ONLY

Permit #: 255719 Local ID: MW-18
Tax Map/Parcel #: 234-22.00-10.00
Property Owner: Sussex County, Delaware
Water Well Contractor: Hynes & Associates WC Lic.#: 919
Well Driller In Charge During Construction: Michael Hynes

DRILLING / EXCAVATION METHOD

- [X] Auger
- [ ] Bored
- [ ] Mud Rotary
- [ ] Driver
- [ ] Jetted
- [ ] Air Rotary
- [ ] Cable Tool
- [ ] Washed
- [ ] Reverse Rotary
- [ ] Other (Specify):

Total Depth Of Excavation (Feet BGS): 22
Construction Date: 9/26/2016

CASING INSTALLATION:

	INNER	OUTER (1)	OUTER (2)	OUTER (3)
Casing Top (Inches AGS):	36			
Casing Bottom (Feet BGS):	12			
Casing Diameter (Inches):	2			
Casing Material:	Sch 40 PVC			

Gravel Pack Size (#): 2
AGS=Above Ground Surface BGS=Below Ground Surface

SCREEN INSTALLATION:

Screen Top (Feet BGS): 12
Screen Bottom (Feet BGS): 22
Screen Diameter (Inches): 2
Screen Material: Sch. 40 PVC.
Screen Slot Size (1000 of an Inch): 0.010"

WELL USE:

- [ ] Domestic
- [ ] Industrial
- [ ] Heat Pump Supply
- [ ] Irrigation
- [ ] Public
- [ ] Heat Pump Recharge
- [ ] Agricultural
- [ ] Misc. Public
- [ ] Closed Loop Heat Pump
- [ ] Agricultural/Lawn Irrigation
- [X] Other (Specify) Monitor Well #18

TYPE OF PERMANENT PUMP INSTALLED:

Pump Manufacturer: _____ Horsepower: _____
Rated Capacity: _____ (GPM) Pump Intake Setting(ft. BGS): _____
Pump Type: [ ] Submersible [ ] Jet [ ] Vertical Turbine Pump
Pump Installed By: _____ [ ] Others Date: _____

Gravel Pack: From: 10 Feet To: 22 Feet
Grout Type: [ ] Bentonite Clay [ ] Cement [X] Bentonite Clay Plug
Other: _____ From: 8 Feet To: 10 Feet
Type Of Non-Grout Backfill Of Well Annulus: Bentonite Grout
From: 0 Feet To: 8 Feet
Static Water Level: 15 Feet [X] Below [ ] Above Ground Surface
Pumping Water Level: _____ Feet On (Date): _____
After: _____ Hours Pumping Rate: _____ GPM
Pumping Method /Device: [ ] Airlift [ ] Mechanical (Pump) Other: _____
Was A Geophysical Log Taken? [ ] Yes [X] No If "Yes", By: _____

WELL HEAD COMPLETION:

Type:
- [ ] Pitless Adapter
- [ ] Standard "T"
- [ ] Well Pit
- [ ] Pad Mount
- [X] Other - Specify: Stick-Up Above Grade

Well Head Completed: 18 Inches [X] Above [ ] Below Ground Surface
Was The Well Tag Attached In Accordance With Current Regulations?
[X] YES [ ] NO If "NO", Please Explain:
MW #18

Site Plan - **If different from original application, *must*** note changes such as distances from well to house, property lines, nearest road, **and all nearby septic systems and central sewer lines** (included suitable plot plan if available).

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT.

Signature - Well Driller in Charge of Well Construction

4026
Well Driller License # Date

White - DNREC • *Canary - Contractor* • *Pink - Owner*

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901
PHONE: 302-739-9944
FAX:302-739-7764

STATE OF DELAWARE
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FORMATION LOG

PLEASE PRINT OR TYPE – ILLEGIBLE OR INCOMPLETE FORMS WILL BE RETURNED

PERMIT #: 255719	**LOCAL ID#:** MW-18
PROPERTY OWNER: Sussex County, DE	
WELL CONTRACTOR: Hydres & Associates	**WC LIC #:** 919

DESCRIPTION	TOP OF STRATA	BOTTOM OF STRATA
Yellowish brown, fine to medium sand, trace to little silt	0	10
Very pale brown, fine to medium sand, trace to some silt	10	22

COMMENTS:

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT

Signature of Well Driller in Charge of Construction	WD License #	Date
Michael J. Hydres	402	11/29/10

White - DNREC • Canary - CONTRACTOR • Pink - Owner

Doc No. 40-08-82-12-11

MAIL TO:

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DIVISION OF WATER RESOURCES
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DOVER, DELAWARE 19901

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FAX: 302-739-7764

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-Authorization Number-

#

ILLEGIBLE OR INCOMPLETE FORMS WIIL BE RETURNED

PLEASE PRINT OR TYPE - USE BLUE OR BLACK INK ONLY

Permit #: 255720 Local ID: MW - 19
Tax Map/Parcel #: 234-22.00-8.00
Property Owner: Sussex County, Delaware
Water Well Contractor: Hynes & Associates WC Lic #: 919
Well Driller In Charge During Construction: Michael Hynes

DRILLING / EXCAVATION METHOD

☒ Auger ☐ Bored ☐ Mud Rotary
☐ Driver ☐ Jetted ☐ Air Rotary
☐ Cable Tool ☐ Washed ☐ Reverse Rotary
☐ Other (Specify): _____

Total Depth Of Excavation (Feet BGS): 26
Construction Date: 9/23/2016

CASING INSTALLATION:

	INNER	OUTER (1)	(2)	(3)
Casing Top (Inches AGS):	36			
Casing Bottom (Feet BGS):	16			
Casing Diameter (Inches):	2			
Casing Material:	Sch. 40 PVC			

Gravel Pack Size (#): 2
AGS=Above Ground Surface BGS=Below Ground Surface

SCREEN INSTALLATION:

Screen Top (Feet BGS): 16
Screen Bottom (Feet BGS): 26
Screen Diameter (Inches): 2
Screen Material: Sch. 40 PVC
Screen Slot Size (1000 of an Inch): 0.010"

WELL USE:

☐ Domestic ☐ Industrial ☐ Heat Pump Supply
☐ Irrigation ☐ Public ☐ Heat Pump Recharge
☐ Agricultural ☐ Misc. Public ☐ Closed Loop Heat Pump
☐ Agricultural/Lawn Irrigation
☒ Other (Specify) Monitor Well #19

TYPE OF PERMANENT PUMP INSTALLED:

Pump Manufacturer: _____ Horsepower: _____
Rated Capacity: _____ (GPM) Pump Intake Setting(ft. BGS): _____
Pump Type: ☐ Submersible ☐ Jet ☐ Vertical Turbine Pump
Pump Installed By: _____ ☐ Others Date: _____

Gravel Pack: From: 14 Feet To: 26 Feet
Grout Type: ☐ Bentonite Clay ☐ Cement ☒ Bentonite Clay Plug
Other: _____ From: 12 Feet To: 14 Feet
Type Of Non-Grout Backfill Of Well Annulus: Bentonite Grout
From: 0 Feet To: 12 Feet
Static Water Level: 15 Feet ☒ Below ☐ Above Ground Surface
Pumping Water Level: _____ Feet On (Date): _____
After: _____ Hours Pumping Rate: _____ GPM
Pumping Method /Device: ☐ Airlift ☐ Mechanical (Pump) Other: _____
Was A Geophysical Log Taken? ☐ Yes ☒ No If "Yes", By: _____

WELL HEAD COMPLETION:

Type: ☐ Pitless Adapter ☐ Standard "T"
☐ Well Pit ☐ Pad Mount
☒ Other - Specify: Stick-Up Above Grade
Well Head Completed: 18 Inches ☒ Above ☐ Below Ground Surface
Was The Well Tag Attached In Accordance With Current Regulations?
☒ YES ☐ NO If "NO", Please Explain:
MW #19

Site Plan - **If different from original application, *must* note changes such as distances from well to house, property lines, nearest road, and all nearby septic systems and central sewer lines** (included suitable plot plan if available).

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT.

Signature - Well Driller in Charge of Well Construction

4026 Well Driller License #

11/29/16 Date

White - DNREC • *Canary - Contractor* • *Pink - Owner*

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901
PHONE: 302-739-9944
FAX:302-739-7764

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL

WELL COMPLETION REPORT MUST BE RETURNED WITHIN 30 DAYS OF CONSTRUCTION DATE

FORMATION LOG

PLEASE PRINT OR TYPE – ILLEGIBLE OR INCOMPLETE FORMS WILL BE RETURNED

PERMIT #: 255720	**LOCAL ID#:** MW-19
PROPERTY OWNER: Sussex County, DE	
WELL CONTRACTOR: Hyms & Associates	**WC LIC #:** 919

DESCRIPTION	TOP OF STRATA	BOTTOM OF STRATA
Yellowish brown, fine to medium sand, trace silt	0	10
Yellow, fine to coarse sand, trace to some silt	10	20
Very pale brown, fine to medium sand, little silt	20	26

COMMENTS:

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT

Signature of Well Driller in Charge of Construction | 4026 WD License # | 11/29/16 Date

White - DNREC • Canary - CONTRACTOR • Pink - Owner

Doc No. 40-08-82-12-11

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

PHONE: 302-739-9944
FAX: 302-739-7764

STATE OF DELAWARE
DEPARTMENT OF NATURE RESOURCES AND ENVIRONMENTAL CONTROL

WELL COMPLETION REPORT

http://www.dnrec.state.de.us/

WELL COMPLETION REPORT MUST BE RETURNED WITHIN 30 DAYS OF CONSTRUCTION. A WELL FORMATION LOG MUST BE INCLUDED WITH THIS REPORT.

-Authorization Number-

#

ILLEGIBLE OR INCOMPLETE FORMS WIIL BE RETURNED

PLEASE PRINT OR TYPE - USE BLUE OR BLACK INK ONLY

Permit #: 255721 Local ID: MW-20
Tax Map/Parcel #: 234-22.00-8.00
Property Owner: Sussex County, Delaware
Water Well Contractor: Hynes & Associates WC Lic #: 919
Well Driller In Charge During Construction: Michael Hynes

DRILLING / EXCAVATION METHOD

☒ Auger ☐ Bored ☐ Mud Rotary
☐ Driver ☐ Jetted ☐ Air Rotary
☐ Cable Tool ☐ Washed ☐ Reverse Rotary
☐ Other (Specify): _____

Total Depth Of Excavation (Feet BGS): 20
Construction Date: 10/5/2016

CASING INSTALLATION:

	INNER	OUTER (1)	OUTER (2)	OUTER (3)
Casing Top (Inches AGS):	36			
Casing Bottom (Feet BGS):	10			
Casing Diameter (Inches):	2			
Casing Material:	Sch. 40 PVC			

Gravel Pack Size (#): 2
AGS=Above Ground Surface BGS=Below Ground Surface

SCREEN INSTALLATION:

Screen Top (Feet BGS): 10
Screen Bottom (Feet BGS): 20
Screen Diameter (Inches): 2
Screen Material: Sch. 40 PVC
Screen Slot Size (1000 of an Inch): 0.010"

WELL USE:

☐ Domestic ☐ Industrial ☐ Heat Pump Supply
☐ Irrigation ☐ Public ☐ Heat Pump Recharge
☐ Agricultural ☐ Misc. Public ☐ Closed Loop Heat Pump
☐ Agricultural/Lawn Irrigation
☒ Other (Specify) Monitor Well #20

TYPE OF PERMANENT PUMP INSTALLED:

Pump Manufacturer: _____ Horsepower: _____
Rated Capacity: _____ (GPM) Pump Intake Setting(ft. BGS): _____
Pump Type: ☐ Submersible ☐ Jet ☐ Vertical Turbine Pump
Pump Installed By: _____ ☐ Others Date: _____

Gravel Pack: From: 8 Feet To: 20 Feet
Grout Type: ☐ Bentonite Clay ☐ Cement ☒ Bentonite Clay Plug
Other: _____ From: 6 Feet To: 8 Feet
Type Of ~~Non-Grout~~ Backfill Of Well Annulus: Bentonite Grout
From: 0 Feet To: 6 Feet
Static Water Level: 9 Feet ☒ Below ☐ Above Ground Surface
Pumping Water Level: _____ Feet On (Date): _____
After: _____ Hours Pumping Rate: _____ GPM
Pumping Method /Device: ☐ Airlift ☐ Mechanical (Pump) Other: _____
Was A Geophysical Log Taken? ☐ Yes ☒ No If "Yes", By: _____

WELL HEAD COMPLETION:

Type: ☐ Pitless Adapter ☐ Standard "T"
☐ Well Pit ☐ Pad Mount
☒ Other - Specify: Stick-Up Above Grade
Well Head Completed: 18 Inches ☒ Above ☐ Below Ground Surface
Was The Well Tag Attached In Accordance With Current Regulations?
☒ YES ☐ NO If "NO", Please Explain:
MW #20

Site Plan - **If different from original application, *must*** note changes such as distances from well to house, property lines, nearest road, **and all nearby septic systems and central sewer lines** (included suitable plot plan if available).

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT.

Signature - Well Driller in Charge of Well Construction

4026 — Well Driller License #

11/29/16 — Date

White - DNREC • *Canary - Contractor* • *Pink - Owner*

Doc No. 40-08/07/01/10 - CRR 1

MAIL TO:

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FAX: 302-739-7764

STATE OF DELAWARE
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WELL COMPLETION REPORT MUST BE RETURNED WITHIN 30 DAYS OF CONSTRUCTION DATE

FORMATION LOG

PAGE 1 OF 1 PAGES

PLEASE PRINT OR TYPE - ILLEGIBLE OR INCOMPLETE FORMS WILL BE RETURNED

PERMIT #: 255721	LOCAL ID#: MW-20
PROPERTY OWNER: Sussex County, DE	
WELL CONTRACTOR: Hydres & Associates	WC LIC #: 919

DESCRIPTION	TOP OF STRATA	BOTTOM OF STRATA
Light yellowish brown, fine to medium sand, trace to little silt, trace clay	0	8
Yellow, fine to coarse sand, trace to little silt	8	14
White, fine to medium sand, trace to little silt	14	20

COMMENTS:

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT

Michael J. Hydres — 4026 — 11/29/16

Signature of Well Driller in Charge of Construction | WD License # | Date

White - DNREC • Canary - *CONTRACTOR* • *Pink - Owner* Doc No. 40-08-82-12-11

MAIL TO:

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DIVISION OF WATER RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

PHONE: 302-739-9944
FAX: 302-739-7764

STATE OF DELAWARE
DEPARTMENT OF NATURE RESOURCES
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WELL COMPLETION REPORT

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WELL COMPLETION REPORT MUST BE RETURNED WITHIN 30 DAYS OF CONSTRUCTION. A WELL FORMATION LOG MUST BE INCLUDED WITH THIS REPORT.

-Authorization Number-

#

ILLEGIBLE OR INCOMPLETE FORMS WIIL BE RETURNED

PLEASE PRINT OR TYPE - USE BLUE OR BLACK INK ONLY

Permit #: 255722 Local ID: MW-21
Tax Map/Parcel #: 234-22.00-8.00
Property Owner: Sussex County Delaware
Water Well Contractor: Hynes & Assoc. WC Lic #: 919
Well Driller In Charge During Construction: Michael Hynes

DRILLING / EXCAVATION METHOD

☐Auger ☐Bored ☐Mud Rotary
☐Driver ☐Jetted ☐Air Rotary
☐Cable Tool ☐Washed ☐Reverse Rotary
☐Other (Specify): _____

Total Depth Of Excavation (Feet BGS): 20
Construction Date: 9/15/2016

CASING INSTALLATION:

	INNER	OUTER (1)	(2)	(3)
Casing Top (Inches AGS):	36"			
Casing Bottom (Feet BGS):	10			
Casing Diameter (Inches):	2			
Casing Material:	Sch. 40 PVC			

Gravel Pack Size (#): 2
AGS=Above Ground Surface BGS=Below Ground Surface

SCREEN INSTALLATION:

Screen Top (Feet BGS): 10
Screen Bottom (Feet BGS): 20
Screen Diameter (Inches): 2
Screen Material: Sch. 40 PVC
Screen Slot Size (1000 of an Inch): 0.010"

WELL USE:

☐ Domestic ☐ Industrial ☐ Heat Pump Supply
☐ Irrigation ☐ Public ☐ Heat Pump Recharge
☐ Agricultural ☐ Misc. Public ☐ Closed Loop Heat Pump
☐ Agricultural/Lawn Irrigation
☒ Other (Specify) Monitor Well

TYPE OF PERMANENT PUMP INSTALLED:

Pump Manufacturer: _____ Horsepower: _____
Rated Capacity: _____ (GPM) Pump Intake Setting(ft. BGS): _____
Pump Type: ☐ Submersible ☐ Jet ☐ Vertical Turbine Pump
Pump Installed By: _____ ☐ Others Date: _____

Gravel Pack: From: 8 Feet To: 20 Feet
Grout Type: ☐ Bentonite Clay ☐ Cement ☒ Bentonite Clay Plug
Other: _____ From: 6 Feet To: 8 Feet
Type Of ~~Non-Grout~~ Backfill Of Well Annulus: Bentonite Grout
From: 0 Feet To: 6 Feet
Static Water Level: 11 Feet ☒ Below ☐ Above Ground Surface
Pumping Water Level: _____ Feet On (Date): _____
After: _____ Hours Pumping Rate: _____ GPM
Pumping Method /Device: ☐ Airlift ☐ Mechanical (Pump) Other: _____
Was A Geophysical Log Taken? ☐ Yes ☒ No If "Yes", By: _____

WELL HEAD COMPLETION:

Type: ☐ Pitless Adapter ☐ Standard "T"
☐ Well Pit ☐ Pad Mount
☒ Other - Specify: Stick-Up Above Grade
Well Head Completed: 18 Inches ☒ Above ☐ Below Ground Surface
Was The Well Tag Attached In Accordance With Current Regulations?
☒ YES ☐ NO If "NO", Please Explain:

MW#21

Site Plan - **If different from original application, *must*** note changes such as distances from well to house, property lines, nearest road, **and all nearby septic systems and central sewer lines** (included suitable plot plan if available).

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT.

Signature - Well Driller in Charge of Well Construction

4026 — Well Driller License #

10/14/16 — Date

White - DNREC • *Canary - Contractor* • *Pink - Owner*

Doc No. 40-08/07/01/10 - CRR 1

MAIL TO:

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FAX: 302-739-7764

STATE OF DELAWARE
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FORMATION LOG

WELL COMPLETION REPORT MUST BE RETURNED WITHIN 30 DAYS OF CONSTRUCTION DATE

PAGE 1 OF 1 PAGES

PLEASE PRINT OR TYPE - ILLEGIBLE OR INCOMPLETE FORMS WILL BE RETURNED

PERMIT #: 255722 | LOCAL ID#: MW-21

PROPERTY OWNER: Sussex County Delaware

WELL CONTRACTOR: John D. Hynes & Associates | WC LIC #: [redacted]919

DESCRIPTION	TOP OF STRATA	BOTTOM OF STRATA
Light Brown Fine to Medium Sand with Trace Silt	0	10
Light Gray, Fine to Coarse Sand with Trace Silt	10	20
MW#21		

COMMENTS:

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT

Signature of Well Driller in Charge of Construction | WD License # 902 | Date 11/29/16

White - DNREC • Canary - *CONTRACTOR* • *Pink - Owner*

Doc No. 40-08-82-12-11

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

PHONE: 302-739-9944
FAX: 302-739-7764

STATE OF DELAWARE
DEPARTMENT OF NATURE RESOURCES
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WELL COMPLETION REPORT

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-Authorization Number-

#

ILLEGIBLE OR INCOMPLETE FORMS WIIL BE RETURNED

PLEASE PRINT OR TYPE - USE BLUE OR BLACK INK ONLY

Permit #: 255723 Local ID: MW-22
Tax Map/Parcel #: 234-22.00-8.00
Property Owner: Sussex County, Delaware
Water Well Contractor: Hynes & Associates WC Lic #: 919
Well Driller In Charge During Construction: Michael Hynes

DRILLING / EXCAVATION METHOD

☒ Auger ☐ Bored ☐ Mud Rotary
☐ Driver ☐ Jetted ☐ Air Rotary
☐ Cable Tool ☐ Washed ☐ Reverse Rotary
☐ Other (Specify): _____

Total Depth Of Excavation (Feet BGS): 20
Construction Date: 9/23/2016

CASING INSTALLATION:

	INNER	OUTER (1)	(2)	(3)
Casing Top (Inches AGS):	36			
Casing Bottom (Feet BGS):	10			
Casing Diameter (Inches):	2			
Casing Material:	Sch. 40 PVC			

Gravel Pack Size (#): 2
AGS=Above Ground Surface BGS=Below Ground Surface

SCREEN INSTALLATION:

Screen Top (Feet BGS): 10
Screen Bottom (Feet BGS): 20
Screen Diameter (Inches): 2
Screen Material: Sch. 40 PVC
Screen Slot Size (1000 of an Inch): 0.010"

WELL USE:

☐ Domestic ☐ Industrial ☐ Heat Pump Supply
☐ Irrigation ☐ Public ☐ Heat Pump Recharge
☐ Agricultural ☐ Misc. Public ☐ Closed Loop Heat Pump
☐ Agricultural/Lawn Irrigation
☒ Other (Specify) Monitor Well #22

TYPE OF PERMANENT PUMP INSTALLED:

Pump Manufacturer: _____ Horsepower: _____
Rated Capacity: _____ (GPM) Pump Intake Setting(ft. BGS): _____
Pump Type: ☐ Submersible ☐ Jet ☐ Vertical Turbine Pump
Pump Installed By: _____ ☐ Others Date: _____

Gravel Pack: From: 8 Feet To: 20 Feet
Grout Type: ☐ Bentonite Clay ☐ Cement ☒ Bentonite Clay Plug
Other: _____ From: 6 Feet To: 8 Feet
Type Of Non-Grout Backfill Of Well Annulus: Bentonite Grout
From: 0 Feet To: 6 Feet
Static Water Level: 11 Feet ☒ Below ☐ Above Ground Surface
Pumping Water Level: _____ Feet On (Date): _____
After: _____ Hours Pumping Rate: _____ GPM
Pumping Method /Device: ☐ Airlift ☐ Mechanical (Pump) Other: _____
Was A Geophysical Log Taken? ☐ Yes ☒ No If "Yes", By: _____

WELL HEAD COMPLETION:

Type: ☐ Pitless Adapter ☐ Standard "T"
☐ Well Pit ☐ Pad Mount
☒ Other - Specify: Stick-Up Above Grade
Well Head Completed: 18 Inches ☒ Above ☐ Below Ground Surface
Was The Well Tag Attached In Accordance With Current Regulations?
☒ YES ☐ NO If "NO", Please Explain:
MW #22

Site Plan - **If different from original application, *must*** note changes such as distances from well to house, property lines, nearest road, **and all nearby septic systems and central sewer lines** (included suitable plot plan if available).

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT.

Michael J Hynes
Signature - Well Driller in Charge of Well Construction

4026 11/29/16
Well Driller License # Date

White - DNREC • *Canary - Contractor* • *Pink - Owner*

Doc No. 40-08/07/01/10 - CRR 1

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901
PHONE: 302-739-9944
FAX:302-739-7764

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL

WELL COMPLETION REPORT MUST BE RETURNED WITHIN 30 DAYS OF CONSTRUCTION DATE

FORMATION LOG

PAGE 1 OF 1 PAGES

PLEASE PRINT OR TYPE – ILLEGIBLE OR INCOMPLETE FORMS WILL BE RETURNED

PERMIT #: 255723	**LOCAL ID#:** MW-22
PROPERTY OWNER: Sussex County, DE	
WELL CONTRACTOR: Hynes & Associates	**WC LIC #:** 919

DESCRIPTION	TOP OF STRATA	BOTTOM OF STRATA
Yellowish brown, fine to medium sand trace to some silt	0	6
Very pale brown, fine to medium sand, trace to little silt	6	12
Light gray, fine to medium sand, trace to little silt	12	28

COMMENTS:

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT

Michael D. Hynes — 4026 — 11/29/16

Signature of Well Driller in Charge of Construction | WD License # | Date

White - DNREC • *Canary - CONTRACTOR* • *Pink - Owner*

Doc No. 40-08-82-12-11

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

PHONE: 302-739-9944
FAX: 302-739-7764

STATE OF DELAWARE
DEPARTMENT OF NATURE RESOURCES AND ENVIRONMENTAL CONTROL

WELL COMPLETION REPORT

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-Authorization Number-

#

ILLEGIBLE OR INCOMPLETE FORMS WIIL BE RETURNED

PLEASE PRINT OR TYPE - USE BLUE OR BLACK INK ONLY

Permit #: 255724 Local ID: MW-23
Tax Map/Parcel #: 234-22.00-8.00
Property Owner: Sussex County Delaware
Water Well Contractor: Hynes & Assoc WC Lic #: 919
Well Driller In Charge During Construction: Michael Hynes

DRILLING / EXCAVATION METHOD

☒ Auger ☐ Bored ☐ Mud Rotary
☐ Driver ☐ Jetted ☐ Air Rotary
☐ Cable Tool ☐ Washed ☐ Reverse Rotary
☐ Other (Specify):

Total Depth Of Excavation (Feet BGS): 20 ft
Construction Date: 9/16/16

CASING INSTALLATION:

	INNER	OUTER (1)	(2)	(3)
Casing Top (Inches AGS):	36			
Casing Bottom (Feet BGS):	10			
Casing Diameter (Inches):	2			
Casing Material:	Sch 40 PVC			

Gravel Pack Size (#): 2

AGS=Above Ground Surface BGS=Below Ground Surface

SCREEN INSTALLATION:

Screen Top (Feet BGS): 10
Screen Bottom (Feet BGS): 20
Screen Diameter (Inches): 2
Screen Material: Sch 40 PVC
Screen Slot Size (1000 of an Inch): 0.010"

WELL USE:

☐ Domestic ☐ Industrial ☐ Heat Pump Supply
☐ Irrigation ☐ Public ☐ Heat Pump Recharge
☐ Agricultural ☐ Misc. Public ☐ Closed Loop Heat Pump
☐ Agricultural/Lawn Irrigation
☒ Other (Specify) Monitor Well #23

TYPE OF PERMANENT PUMP INSTALLED:

Pump Manufacturer: _____ Horsepower: _____
Rated Capacity: _____ (GPM) Pump Intake Setting(ft. BGS): _____
Pump Type: ☐ Submersible ☐ Jet ☐ Vertical Turbine Pump
Pump Installed By: _____ ☐ Others Date: _____

Gravel Pack: From: 8 Feet To: 20 Feet
Grout Type: ☐ Bentonite Clay ☐ Cement ☒ Bentonite Clay Plug
Other: _____ From: 6 Feet To: 8 Feet
Type Of ~~Non-Grout~~ Backfill Of Well Annulus: Bentonite Grout
From: 0 Feet To: 6 Feet
Static Water Level: 11 Feet ☒ Below ☐ Above Ground Surface
Pumping Water Level: _____ Feet On (Date): _____
After: _____ Hours Pumping Rate: _____ GPM
Pumping Method /Device: ☐ Airlift ☐ Mechanical (Pump) Other: _____
Was A Geophysical Log Taken? ☐ Yes ☐ No If "Yes", By: _____

WELL HEAD COMPLETION:

Type: ☐ Pitless Adapter ☐ Standard "T"
☐ Well Pit ☐ Pad Mount
☒ Other - Specify: Stick-Up Above Grade
Well Head Completed: 18 Inches ☒ Above ☐ Below Ground Surface
Was The Well Tag Attached In Accordance With Current Regulations?
☒ YES ☐ NO If "NO", Please Explain:
MW # 23

Site Plan - **If different from original application, *must*** note changes such as distances from well to house, property lines, nearest road, **and all nearby septic systems and central sewer lines** (included suitable plot plan if available).

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT.

Signature - Well Driller in Charge of Well Construction

4026 Well Driller License # 10/14/16 Date

White - DNREC • *Canary - Contractor* • *Pink - Owner*

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901
PHONE: 302-739-9944
FAX: 302-739-7764

STATE OF DELAWARE
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FORMATION LOG

PAGE 1 OF 1 PAGES

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PERMIT #: 255724 | LOCAL ID#: MW-23

PROPERTY OWNER: Sussex County Delaware.

WELL CONTRACTOR: John D. Hynes & Associates | WC LIC #: [redacted] 919

DESCRIPTION	TOP OF STRATA	BOTTOM OF STRATA
Light Brown. Fine to Medium Sand Trace Silt	0	10
Light Gray, Fine to Coarse Sand Trace to Little Silt	10	20
MW#23		

COMMENTS:

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT

Signature of Well Driller in Charge of Construction | WD License # 4026 | Date 11/29/16

White - DNREC • Canary - *CONTRACTOR* • *Pink - Owner*

Doc No. 40-08-82-12-11

MAIL TO:

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FAX: 302-739-7764

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-Authorization Number-

#

ILLEGIBLE OR INCOMPLETE FORMS WIIL BE RETURNED

PLEASE PRINT OR TYPE - USE BLUE OR BLACK INK ONLY

Permit #: 255725 Local ID: MW-24
Tax Map/Parcel #: 234-22.00-8.00
Property Owner: Sussex County Delaware
Water Well Contractor: Hynes & Assoc WC Lic #: 919
Well Driller In Charge During Construction: Michael Hynes

DRILLING / EXCAVATION METHOD

☒ Auger ☐ Bored ☐ Mud Rotary
☐ Driver ☐ Jetted ☐ Air Rotary
☐ Cable Tool ☐ Washed ☐ Reverse Rotary
☐ Other (Specify): _____

Total Depth Of Excavation (Feet BGS): 20
Construction Date: 9/15/16

CASING INSTALLATION:

	INNER	OUTER (1)	(2)	(3)
Casing Top (Inches AGS):	36			
Casing Bottom (Feet BGS):	10			
Casing Diameter (Inches):	2			
Casing Material:	Sch. 40 PVC			

Gravel Pack Size (#): 2 AGS=Above Ground Surface BGS=Below Ground Surface

SCREEN INSTALLATION:

Screen Top (Feet BGS): 10
Screen Bottom (Feet BGS): 20
Screen Diameter (Inches): 2
Screen Material: Sch. 40 PVC
Screen Slot Size (1000 of an Inch): 0.010"

WELL USE:

☐ Domestic ☐ Industrial ☐ Heat Pump Supply
☐ Irrigation ☐ Public ☐ Heat Pump Recharge
☐ Agricultural ☐ Misc. Public ☐ Closed Loop Heat Pump
☐ Agricultural/Lawn Irrigation
☒ Other (Specify) Monitor Well #24

TYPE OF PERMANENT PUMP INSTALLED:

Pump Manufacturer: _____ Horsepower: _____
Rated Capacity: _____ (GPM) Pump Intake Setting(ft. BGS): _____
Pump Type: ☐ Submersible ☐ Jet ☐ Vertical Turbine Pump
Pump Installed By: _____ ☐ Others Date: _____

Gravel Pack: From: 8 Feet To: 20 Feet
Grout Type: ☐ Bentonite Clay ☐ Cement ☒ Bentonite Clay Plug
Other: _____ From: 6 Feet To: 8 Feet
Type Of ~~Non-Grout~~ Backfill Of Well Annulus: Bentonite Grout
From: 0 Feet To: 6 Feet
Static Water Level: 13 Feet ☒ Below ☐ Above Ground Surface
Pumping Water Level: _____ Feet On (Date): _____
After: _____ Hours Pumping Rate: _____ GPM
Pumping Method /Device: ☐ Airlift ☐ Mechanical (Pump) Other: _____
Was A Geophysical Log Taken? ☐ Yes ☐ No If "Yes", By: _____

WELL HEAD COMPLETION:

Type: ☐ Pitless Adapter ☐ Standard "T"
☐ Well Pit ☐ Pad Mount
☒ Other - Specify: Stick-up Above Grade
Well Head Completed: 18 Inches ☒ Above ☐ Below Ground Surface
Was The Well Tag Attached In Accordance With Current Regulations?
☒ YES ☐ NO If "NO", Please Explain:
MW #24

Site Plan - **If different from original application, *must*** note changes such as distances from well to house, property lines, nearest road, **and all nearby septic systems and central sewer lines** (included suitable plot plan if available).

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT.

Michael Hynes
Signature - Well Driller in Charge of Well Construction

40210 11/29/16
Well Driller License # Date

White - DNREC • *Canary - Contractor* • *Pink - Owner*

Doc No. 40-08/07/01/10 - CRR 1

MAIL TO:

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FAX: 302-739-7764

STATE OF DELAWARE
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PAGE 1 OF 1 PAGES

PLEASE PRINT OR TYPE - ILLEGIBLE OR INCOMPLETE FORMS WILL BE RETURNED

PERMIT #: 255725 | LOCAL ID#: 234-22.00-8.00 (MW-24)

PROPERTY OWNER: Sussex County DE

WELL CONTRACTOR: John D. Hynes & Associates | WC LIC #: [redacted]919

DESCRIPTION	TOP OF STRATA	BOTTOM OF STRATA
Light Brown, Fine to Medium Sand, with Trace to Little Silt	0	8
Light Gray, Fine to Medium Sand with Trace to Little Silt	8	20
MW#24		

COMMENTS:

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT

Michael O'Hynes — 4026 — 11/29/16

Signature of Well Driller in Charge of Construction | WD License # | Date

White - DNREC • Canary - *CONTRACTOR* • *Pink - Owner*

Doc No. 40-08-82-12-11

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

PHONE: 302-739-9944
FAX: 302-739-7764

STATE OF DELAWARE
DEPARTMENT OF NATURE RESOURCES
AND ENVIRONMENTAL CONTROL

WELL COMPLETION REPORT

http://www.dnrec.state.de.us/

WELL COMPLETION REPORT MUST BE RETURNED WITHIN 30 DAYS OF CONSTRUCTION. A WELL FORMATION LOG MUST BE INCLUDED WITH THIS REPORT.

-Authorization Number-

#

ILLEGIBLE OR INCOMPLETE FORMS WIIL BE RETURNED

PLEASE PRINT OR TYPE - USE BLUE OR BLACK INK ONLY

Permit #: 255726 Local ID: MW-25

Tax Map/Parcel #: 234-22.00-8.00

Property Owner: Sussex County, Delaware

Water Well Contractor: Hynes & Associates WC Lic #: 919

Well Driller In Charge During Construction: Michael Hynes

DRILLING / EXCAVATION METHOD

- [X] Auger
- [ ] Bored
- [ ] Mud Rotary
- [ ] Driver
- [ ] Jetted
- [ ] Air Rotary
- [ ] Cable Tool
- [ ] Washed
- [ ] Reverse Rotary
- [ ] Other (Specify): _____

Total Depth Of Excavation (Feet BGS): 20

Construction Date: 9/16/2016

CASING INSTALLATION:

	INNER	OUTER (1)	OUTER (2)	OUTER (3)
Casing Top (Inches AGS):	36			
Casing Bottom (Feet BGS):	10			
Casing Diameter (Inches):	2			
Casing Material:	Sch. 40 PVC			

Gravel Pack Size (#): 2

AGS=Above Ground Surface BGS=Below Ground Surface

SCREEN INSTALLATION:

Screen Top (Feet BGS): 10

Screen Bottom (Feet BGS): 20

Screen Diameter (Inches): 2

Screen Material: Sch. 40 PVC

Screen Slot Size (1000 of an Inch): 0.010"

WELL USE:

- [ ] Domestic
- [ ] Industrial
- [ ] Heat Pump Supply
- [ ] Irrigation
- [ ] Public
- [ ] Heat Pump Recharge
- [ ] Agricultural
- [ ] Misc. Public
- [ ] Closed Loop Heat Pump
- [ ] Agricultural/Lawn Irrigation
- [X] Other (Specify) Monitor Well #25

TYPE OF PERMANENT PUMP INSTALLED:

Pump Manufacturer: _____ Horsepower: _____

Rated Capacity: _____ (GPM) Pump Intake Setting(ft. BGS): _____

Pump Type: [ ] Submersible [ ] Jet [ ] Vertical Turbine Pump

Pump Installed By: _____ [ ] Others Date: _____

Gravel Pack: From: 8 Feet To: 20 Feet

Grout Type: [ ] Bentonite Clay [ ] Cement [X] Bentonite Clay Plug

Other: _____ From: 6 Feet To: 8 Feet

Type Of Non-Grout Backfill Of Well Annulus: Bentonite Grout

From: 0 Feet To: 6 Feet

Static Water Level: 11 Feet [X] Below [ ] Above Ground Surface

Pumping Water Level: _____ Feet On (Date): _____

After: _____ Hours Pumping Rate: _____ GPM

Pumping Method /Device: [ ] Airlift [ ] Mechanical (Pump) Other: _____

Was A Geophysical Log Taken? [ ] Yes [X] No If "Yes", By: _____

WELL HEAD COMPLETION:

Type:
- [ ] Pitless Adapter
- [ ] Standard "T"
- [ ] Well Pit
- [ ] Pad Mount
- [X] Other - Specify: Stick-Up Above Grade

Well Head Completed: 18 Inches [X] Above [ ] Below Ground Surface

Was The Well Tag Attached In Accordance With Current Regulations?

[X] YES [ ] NO If "NO", Please Explain:

MW #25

Site Plan - **If different from original application, *must* note changes such as distances from well to house, property lines, nearest road, and all nearby septic systems and central sewer lines** (included suitable plot plan if available).

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT.

Signature - Well Driller in Charge of Well Construction

4026 — Well Driller License #

11/29/16 — Date

White - DNREC • *Canary - Contractor* • *Pink - Owner*

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901
PHONE: 302-739-9944
FAX:302-739-7764

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL

FORMATION LOG

WELL COMPLETION REPORT MUST BE RETURNED WITHIN 30 DAYS OF CONSTRUCTION DATE

PAGE 1 OF 1 PAGES

PLEASE PRINT OR TYPE – ILLEGIBLE OR INCOMPLETE FORMS WILL BE RETURNED

PERMIT #: 255726	**LOCAL ID#:** MW-25
PROPERTY OWNER: Sussex County, DE	
WELL CONTRACTOR: Hynes & Associates	**WC LIC #:** 719

DESCRIPTION	TOP OF STRATA	BOTTOM OF STRATA
Pale brown, fine to medium sand, trace silt	0	8
Very pale brown, fine to coarse sand, trace silt, trace clay	8	20

COMMENTS:

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT

Signature of Well Driller in Charge of Construction | 402 WD License # | 11/29/16 Date

White - DNREC • Canary - CONTRACTOR • Pink - Owner

Doc No. 40-08-82-12-11

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

PHONE: 302-739-9944
FAX: 302-739-7764

STATE OF DELAWARE
DEPARTMENT OF NATURE RESOURCES
AND ENVIRONMENTAL CONTROL

WELL COMPLETION REPORT

http://www.dnrec.state.de.us/

WELL COMPLETION REPORT MUST BE RETURNED WITHIN 30 DAYS OF CONSTRUCTION. A WELL FORMATION LOG MUST BE INCLUDED WITH THIS REPORT.

-Authorization Number-

#

ILLEGIBLE OR INCOMPLETE FORMS WIIL BE RETURNED

PLEASE PRINT OR TYPE - USE BLUE OR BLACK INK ONLY

Permit #: 255727 Local ID: MW-26
Tax Map/Parcel #: 234-22.00-8.00
Property Owner: Sussex County Delaware
Water Well Contractor: Hynes & Assoc WC Lic #: 919
Well Driller In Charge During Construction: Michael Hynes

DRILLING / EXCAVATION METHOD

☒ Auger ☐ Bored ☐ Mud Rotary
☐ Driver ☐ Jetted ☐ Air Rotary
☐ Cable Tool ☐ Washed ☐ Reverse Rotary
☐ Other (Specify):

Total Depth Of Excavation (Feet BGS): 26
Construction Date: 9/15/16

CASING INSTALLATION:

	INNER	OUTER (1)	OUTER (2)	OUTER (3)
Casing Top (Inches AGS):	36"			
Casing Bottom (Feet BGS):	16'			
Casing Diameter (Inches):	2"			
Casing Material:	Sch. 40 PVC			

Gravel Pack Size (#): 2
AGS=Above Ground Surface BGS=Below Ground Surface

SCREEN INSTALLATION:

Screen Top (Feet BGS): 16
Screen Bottom (Feet BGS): 26
Screen Diameter (Inches): 2
Screen Material: Sch. 40 PVC
Screen Slot Size (1000 of an Inch): 0.010"

WELL USE:

☐ Domestic ☐ Industrial ☐ Heat Pump Supply
☐ Irrigation ☐ Public ☐ Heat Pump Recharge
☐ Agricultural ☐ Misc. Public ☐ Closed Loop Heat Pump
☐ Agricultural/Lawn Irrigation
☒ Other (Specify) Monitor Well #26

TYPE OF PERMANENT PUMP INSTALLED:

Pump Manufacturer: _____ Horsepower: _____
Rated Capacity: _____ (GPM) Pump Intake Setting(ft. BGS): _____
Pump Type: ☐ Submersible ☐ Jet ☐ Vertical Turbine Pump
Pump Installed By: _____ ☐ Others Date: _____

Gravel Pack: From: 14 Feet To: 26 Feet
Grout Type: ☐ Bentonite Clay ☐ Cement ☒ Bentonite Clay Plug
Other: _____ From: 12 Feet To: 14 Feet
Type Of ~~Non-Grout~~ Backfill Of Well Annulus: Bentonite Grout
From: 0 Feet To: 12 Feet
Static Water Level: 15 Feet ☒ Below ☐ Above Ground Surface
Pumping Water Level: _____ Feet On (Date): _____
After: _____ Hours Pumping Rate: _____ GPM
Pumping Method /Device: ☐ Airlift ☐ Mechanical (Pump) Other: _____
Was A Geophysical Log Taken? ☐ Yes ☒ No If "Yes", By: _____

WELL HEAD COMPLETION:

Type: ☐ Pitless Adapter ☐ Standard "T"
☐ Well Pit ☐ Pad Mount
☒ Other - Specify: Stick-up Above Grade
Well Head Completed: 18 Inches ☒ Above ☐ Below Ground Surface
Was The Well Tag Attached In Accordance With Current Regulations?
☒ YES ☐ NO If "NO", Please Explain:
MW #26

Site Plan - **If different from original application, *must*** note changes such as distances from well to house, property lines, nearest road, **and all nearby septic systems and central sewer lines** (included suitable plot plan if available).

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT.

Michael J Hynes
Signature - Well Driller in Charge of Well Construction

4026 11/29/16
Well Driller License # Date

White - DNREC • *Canary - Contractor* • *Pink - Owner*

Doc No. 40-08/07/01/10 - CRR 1

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901
PHONE: 302-739-9944
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STATE OF DELAWARE
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FORMATION LOG

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PAGE 1 OF 1 PAGES

PLEASE PRINT OR TYPE - ILLEGIBLE OR INCOMPLETE FORMS WILL BE RETURNED

PERMIT #: 255727 | LOCAL ID#: MW-26

PROPERTY OWNER: Sussex County Delaware

WELL CONTRACTOR: John A Hynes & Associates | WC LIC #: [illegible]919

DESCRIPTION	TOP OF STRATA	BOTTOM OF STRATA
Light Brown, Fine to Medium Sand Trace Silt	0	6
Light Gray, Fine to Coarse Sand Trace Silt	6	26
MW# 26		

COMMENTS:

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT

Signature of Well Driller in Charge of Construction | 4026 WD License # | 11/29/16 Date

White - DNREC • Canary - *CONTRACTOR* • *Pink - Owner*

Doc No. 40-08-82-12-11

Geologic Log of Boring: B—1 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 10-12-16

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown fine quartz SAND trace silt trace black organic matter
2-4	Moist brown fine quartz SAND trace silt
4-6	(same)
6-8	Moist brown fine to medium quartz SAND
8-10	Moist orange-brown to gray fine to medium quartz SAND
10-12	Wet light gray-brown fine to medium quartz SAND
12-14	Wet orange-brown fine to medium quartz SAND trace subrounded quartz gravel
14-16	Wet gray fine quartz SAND trace silt, trace black grains
16-18	Wet orange-brown fine to medium quartz SAND
18-20	Wet gray (trace red) medium to coarse quartz SAND.

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: B-2 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 10-12-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown fine quartz SAND trace silt
2-4	(same)
4-6	(same)
6-8	Moist brown to orange-brown fine to medium quartz SAND
8-10	(same)
10-12	(same)
12-14	Moist light gray (and brown) fine to medium quartz SAND, trace silt, trace black organic matter
14-16	Wet light gray (trace black) fine to medium quartz SAND, trace silt
16-18	Wet light gray (trace red) medium to coarse quartz SAND
18-20	(same)

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: B-3 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 9-28-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown fine to medium quartz SAND
2-4	(same)
4-6	Moist grayish brown fine to medium quartz SAND trace silt, trace black organic matter
6-8	Moist light brown fine quartz SAND trace silt
8-10	Moist gray fine quartz SAND trace silt
10-12	Moist gray SILT trace fine sand
12-14	Wet gray fine to medium quartz SAND
14-16	Wet gray to orange-brown SILT trace clay, trace fine sand
16-18	Wet orange-brown medium to coarse quartz SAND, trace clear subrounded quartz gravel
18-20	(same)

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: B-4 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 9-28-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown fine quartz SAND trace silt
2-4	(same)
4-6	(same)
6-8	Moist brown to orange-brown SILT trace fine sand
8-10	Moist white to orange-brown fine quartz SAND, little silt
10-12	Moist gray to orange-brown SILT trace fine sand
12-14	Wet orange-brown fine quartz SAND trace silt
14-16	(same)
16-18	Wet gray fine to medium quartz SAND
18-20	(same)

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: B-5 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 9-27-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown fine quartz SAND trace silt
2-4	(same)
4-6	(same)
6-8	Dry yellowish brown fine quartz SAND little silt
8-10	(same)
10-12	Dry light-brown fine quartz SAND trace silt, trace black organic matter
12-14	Wet light brown fine to medium quartz SAND trace black organic matter
14-16	Wet gray, orange-brown, dark brown fine to medium quartz SAND
16-18	Wet light brown to gray fine quartz SAND
18-20	Wet brown to orange-brown (trace white, black) fine quartz SAND

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: B-6 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 9-28-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist light brown fine quartz SAND trace silt
2-4	(same)
4-6	Moist reddish brown fine quartz SAND trace silt
6-8	Dry light brown to gray fine quartz SAND some silt
8-10	(same)
10-12	(same)
12-14	Moist orange-brown fine to medium quartz SAND
14-16	Wet light brown to orange-brown fine quartz SAND trace silt
16-18	Wet light brown to gray fine to medium quartz SAND
18-20	(same)

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: B-7 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 9-27-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown fine quartz SAND trace silt
2-4	(same)
4-6	(same)
6-8	(same)
8-10	Moist orange-brown fine quartz SAND trace silt
10-12	Moist light brown fine quartz SAND trace silt
12-14	(same)
14-16	Moist orange-brown fine quartz SAND trace black organic matter
16-18	Wet orange-brown fine quartz SAND
18-20	Wet gray fine quartz SAND trace black organic matter

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: B-8 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 9-28-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist dark brown fine to medium quartz SAND
2-4	Moist brown fine quartz SAND trace silt
4-6	(same)
6-8	(same)
8-10	(same)
10-12	Moist brown fine quartz SAND trace silt
12-14	(same)
14-16	(same)
16-18	Moist orange-brown fine to medium quartz SAND
18-20	Dry gray CLAY trace silt

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: B-9 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 10-31-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Dry light brown fine quartz SAND trace silt
2-4	Dry orange-brown fine quartz SAND trace silt
4-6	Moist orange-brown fine to medium quartz SAND
6-8	Moist light brown fine quartz SAND trace silt
8-10	Moist light brown fine to medium quartz SAND
10-12	Wet brown to gray fine to medium quartz SAND
12-14	Wet brown to gray (trace white, black) fine to medium quartz SAND
14-16	Wet orange-brown fine to medium quartz SAND
16-18	Wet gray (trace black) fine to medium quartz SAND
18-20	Wet gray (trace red, black) fine quartz SAND

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: B-10 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 10-12-16

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown fine quartz SAND trace silt
2-4	(same)
4-6	(same)
6-8	Wet brown fine to medium quartz SAND trace black organic matter
8-10	Wet brown fine to medium quartz SAND
10-12	Wet light gray (trace red) fine to medium quartz SAND
12-14	Wet orange-brown fine to medium quartz SAND
14-16	Wet medium to coarse quartz SAND, little subrounded white, yellow quartz gravel
16-18	Wet gray to brown fine to medium quartz SAND trace black organic matter
18-20	Wet, light brown fine quartz SAND trace silt

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: B-11 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 10-31-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist light brown fine to medium quartz SAND trace silt
2-4	(same)
4-6	Moist light brown to orange-brown fine to medium quartz SAND trace silt
6-8	(same)
8-10	Wet light brown fine to medium quartz SAND trace silt
10-12	Wet grayish brown SILT trace fine sand
12-14	Wet grayish brown fine SAND some silt
14-16	Wet orange-brown (trace black) fine quartz SAND
16-18	Wet orange-brown (trace black) fine to medium quartz SAND
18-20	Wet orange-brown (trace black) medium to coarse quartz SAND

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: B-12 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 10-31-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown fine quartz SAND trace silt
2-4	Moist orange-brown fine to medium quartz SAND trace silt
4-6	Moist light brown fine to medium SAND trace silt
6-8	Wet light brown fine to medium quartz SAND trace silt
8-10	(same)
10-12	(same)
12-14	Wet brown to gray medium to coarse quartz SAND
14-16	Wet fine gray quartz SAND
16-18	(same)
18-20	(same)

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: B-13 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 10-14-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown fine quartz SAND trace silt
2-4	(same)
4-6	(same)
6-8	(same)
8-10	Moist brown to gray fine to medium quartz SAND
10-12	Wet light gray fine quartz SAND trace silt
12-14	(same)
14-16	(same)
16-18	(same)
18-20	(same)

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: B-14 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 10-12-16

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown fine quartz SAND trace silt
2-4	(same)
4-6	(same)
6-8	Moist brown fine quartz SAND little silt
8-10	Moist light gray fine quartz SAND trace silt
10-12	Wet brown to gray fine to medium SAND trace silt
12-14	Wet orange-brown fine to medium quartz SAND
14-16	(same)
16-18	Wet orange-brown fine to medium quartz SAND trace silt
18-20	Wet orange-brown (trace black) fine to medium quartz SAND

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: B-15 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 10-31-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown fine quartz SAND trace silt
2-4	Dry light brown fine quartz SAND trace silt
4-6	Moist light brown fine quartz SAND trace silt
6-8	Moist light brown to orange-brown fine to medium quartz SAND
8-10	Wet gray fine to medium quartz SAND trace silt
10-12	(same)
12-14	(same)
14-16	(same)
16-18	Wet gray to brown fine quartz SAND trace silt
18-20	(No sample available.)

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: B-16 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 10-14-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown fine quartz SAND trace silt
2-4	(same)
4-6	(same)
6-8	Moist gray fine to medium quartz SAND
8-10	Wet gray medium to coarse quartz SAND
10-12	Wet light gray fine quartz SAND trace silt
12-14	Wet gray fine to medium quartz SAND
14-16	(same)
16-18	(same)
18-20	Wet gray medium to coarse quartz SAND trace subrounded quartz gravel

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: B-17 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 9-16-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Dry brown fine quartz SAND trace silt
2-4	(same)
4-6	Moist brown fine quartz SAND trace silt
6-8	(Same)
8-10	Moist brown to gray fine to medium quartz SAND
10-12	Wet gray to brown fine to Medium quartz SAND
12-14	Wet brown and orange-brown medium to coarse quartz SAND trace Subrounded quartz gravel
14-16	(same)
16-18	Wet orange-brown fine to Medium Quartz SAND trace silt
18-20	Wet orange-brown fine quartz SAND little silt

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: B-18 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 10-14-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown fine quartz SAND trace silt
2-4	(same)
4-6	(same)
6-8	(same)
8-10	gray SILT
10-12	gray SILT
12-14	Wet gray fine to medium quartz SAND
14-16	(same)
16-18	(same)
18-20	(same)

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: B-19 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 10-14-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown fine quartz SAND trace silt
2-4	(same)
4-6	(same)
6-8	Moist gray fine to medium quartz SAND trace silt
8-10	Wet brown to gray fine to medium quartz SAND
10-12	Wet light gray fine to medium quartz SAND trace silt
12-14	(No recovery)
14-16	Wet light gray fine quartz SAND little silt
16-18	Wet gray (trace brown) coarse quartz SAND and GRAVEL
18-20	Wet gray medium to coarse quartz SAND trace gravel

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: B-20 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 10-14-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown fine quartz SAND trace silt
2-4	(same)
4-6	Moist gray fine to medium quartz SAND trace silt
6-8	(same)
8-10	Moist light gray fine quartz SAND trace silt
10-12	Wet light gray fine quartz SAND trace silt
12-14	Wet gray fine to medium quartz SAND
14-16	(same)
16-18	(same)
18-20	Wet gray medium to coarse quartz SAND trace subrounded quartz gravel

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: B-21 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 10-14-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown fine quartz SAND trace silt
2-4	(same)
4-6	(same)
6-8	Moist light gray, brown fine quartz SAND trace silt
8-10	(same)
10-12	(same)
12-14	Wet light gray fine quartz SAND little silt
14-16	Wet light gray fine to medium quartz SAND trace silt
16-18	Wet gray medium to coarse quartz SAND
18-20	(same)

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: B-22 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 10-14-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown fine quartz SAND trace silt
2-4	(same)
4-6	(same)
6-8	Moist brown fine quartz SAND trace silt
8-10	(same)
10-12	(same)
12-14	gray SILT trace clay
14-16	gray SILT trace clay
16-18	Wet gray fine to medium quartz SAND
18-20	Wet orange-brown fine to medium quartz SAND

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: B-23 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 10-14-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown fine quartz SAND trace silt
2-4	(same)
4-6	(same)
6-8	Moist light gray fine quartz SAND
8-10	(same)
10-12	(same)
12-14	Wet light gray fine to medium SAND trace silt
14-16	Wet light gray fine to medium quartz SAND
16-18	Wet gray (trace red) medium to coarse quartz SAND
18-20	Wet light gray fine to medium quartz SAND

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: B-24 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 10-14-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown fine quartz SAND trace silt
2-4	(same)
4-6	(same)
6-8	(same)
8-10	Moist light brown fine to medium quartz SAND
10-12	gray SILT trace clay
12-14	(same)
14-16	(same)
16-18	Wet gray fine to medium quartz SAND
18-20	(same)

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: B-25 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 10-12-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown fine quartz SAND trace silt
2-4	Moist brown fine quartz SAND trace silt trace black organic matter
4-6	Moist brown to gray fine to medium quartz SAND trace silt
6-8	Moist brownish gray fine to medium quartz SAND trace silt
8-10	(same)
10-12	Moist light gray fine quartz SAND
12-14	Wet gray medium to coarse quartz SAND
14-16	Wet gray fine quartz SAND trace silt
16-18	(same)
18-20	(same)

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: B-26 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 10-12-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown fine quartz SAND trace silt
2-4	Moist brown fine to medium quartz SAND
4-6	(same)
6-8	Moist gray fine to medium quartz SAND trace black organic matter
8-10	Wet gray medium to coarse quartz SAND trace subrounded gravel
10-12	(same)
12-14	Wet gray medium to coarse quartz SAND
14-16	Wet gray (trace brown, black) fine to medium quartz SAND
16-18	(same)
18-20	gray CLAY

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: B-27 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 10-12-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown fine quartz SAND trace silt
2-4	(same)
4-6	(same)
6-8	Moist brownish-gray fine quartz SAND trace silt
8-10	(same)
10-12	Wet brownish-gray fine SAND trace silt
12-14	(same)
14-16	(same)
16-18	(same)
18-20	(same)

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: B-28 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 10-12-14

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown fine to medium quartz SAND trace silt
2-4	Moist orange-brown fine to medium quartz SAND trace silt
4-6	(same)
6-8	Wet orange-brown medium to coarse quartz SAND
8-10	(same)
10-12	(same)
12-14	Wet light gray (trace red, black, white) fine to medium quartz SAND
14-16	(same)
16-18	Wet gray (trace black, white, red) medium to coarse quartz SAND trace subrounded to subangular gravel
18-20	(same)

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: B-29 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 10-12-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown fine quartz SAND trace silt
2-4	(same)
4-6	(same)
6-8	Wet orange-brown fine quartz SAND
8-10	(same)
10-12	Wet light brown fine to medium quartz SAND
12-14	(same)
14-16	Wet light gray fine quartz SAND trace silt
16-18	Wet gray (trace black, white, red) fine to medium quartz SAND trace Subrounded gravel
18-20	(same)

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: B-30 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 10-12-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown fine quartz SAND trace silt
2-4	(same)
4-6	Moist brown fine to medium quartz SAND
6-8	Wet light gray fine to medium quartz SAND, trace Subangular to subrounded gravel
8-10	(same)
10-12	(same)
12-14	(same)
14-16	Wet brown fine to medium quartz SAND trace subrounded gravel
16-18	Wet orange-brown medium to coarse quartz SAND
18-20	Wet orange-brown (trace red) medium to coarse quartz SAND

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: MW-1 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: Geomatrix Date: 10-23-2015

Method: hollow-stem auger and split spoon sampling (drilled 12-11-2014)

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	brown fine quartz SAND, trace silt
2-4	(same)
4-6	light brown fine quartz SAND, trace silt
6-8	(same)
8-10	grayish white (trace black) fine quartz SAND trace silt
10-12	(same)
12-14	(same)
14-16	light brown (trace black) fine to medium quartz SAND
16-18	light brown fine to medium quartz SAND, trace mica flakes
18-20	orange-brown fine to medium quartz SAND
20-22	yellowish brown SILT little fine sand
22-24	orange-brown fine quartz SAND trace silt
24-26	(same)
26-28	orange-brown fine to medium quartz SAND
28-30	(same)
30-32	light brown fine to medium quartz SAND trace subangular to subrounded gravel
32-34	orange-brown fine quartz SAND
34-36	light brown fine to medium quartz SAND
36-38	orange-brown SILT trace fine sand
38-40	(same)

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: MW-2 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: Geomatrix Date: 10-23-2015

Method: hollow-stem auger and split spoon sampling (drilled 12-11-2014)

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	brown fine to medium quartz SAND
2-4	brown fine to medium quartz SAND little silt
4-6	brown fine to medium quartz SAND trace gravel
6-8	light gray fine quartz SAND, trace silt
8-10	(same)
10-12	(same)
12-14	(same)
14-16	(same)
16-18	(same)
18-20	light gray fine to medium quartz SAND
20-22	(same)
22-24	(same)
24-26	(same)
26-28	(same)
28-30	(same)
30-32	(same)
32-34	(same)
34-36	light gray (trace black) fine to medium quartz SAND
36-38	(same)
38-40	(same)

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: MW-3 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: Geomatrix Date: 10-23-2015 (drilled 12-11-2014)

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	light brown fine quartz SAND trace silt
2-4	brown SILT
4-6	light brown fine quartz SAND trace silt
6-8	(same)
8-10	orange-brown fine quartz SAND trace silt
10-12	light brown fine quartz SAND trace silt
12-14	(same)
14-16	orange-brown fine to medium quartz SAND
16-18	light brown fine quartz SAND trace silt
18-20	gray medium to coarse quartz SAND
20-22	brown to gray fine to medium quartz SAND
22-24	gray fine to medium quartz SAND some silt
24-26	gray fine to medium quartz SAND
26-28	(same)
28-30	(same)
30-32	gray fine to medium quartz SAND trace subrounded gravel
32-34	gray fine to medium quartz SAND
34-36	gray fine to medium quartz SAND trace subrounded gravel
36-38	light gray fine quartz SAND little silt
38-40	(same)

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: MW-7 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: Geomatrix Date: 10-23-2015

Method: hollow-stem auger and split spoon sampling (drilled 12-8-2014)

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	black SILT and SAND, some organic matter
2-4	brown fine to medium quartz SAND
4-6	(same)
6-8	(same)
8-10	gray fine quartz SAND trace silt
10-12	(same)
12-14	(same)
14-16	(same)
16-18	(same)
18-20	(same)
20-22	(same)
22-24	(same)
24-26	(same)
26-28	(same)
28-30	(same)
30-32	(same)
32-34	gray fine to medium quartz SAND trace quartz gravel
34-36	gray fine to medium quartz SAND
36-38	(same)
38-40	gray fine to medium quartz SAND trace gravel

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: MW-8 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: Geomatrix Date: 10-23-2015

Method: hollow-stem auger and split spoon sampling (drilled 12-10-2014)

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	brown fine to medium quartz SAND
2-4	(same)
4-6	(same)
6-8	(same)
8-10	(same)
10-12	brown to gray fine to medium quartz SAND
12-14	(same)
14-16	(same)
16-18	gray fine to medium quartz SAND
18-20	(same)
20-22	(same)
22-24	(same)
24-26	(same)
26-28	(same)
28-30	gray fine quartz SAND trace silt
30-32	(same)
32-34	(same)
34-36	(same)
36-38	gray fine to medium quartz SAND
38-40	(same)

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: MW-9 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: Geomatrix Date: 10-23-2015

Method: hollow-stem auger and split spoon sampling (drilled 12-10-2014)

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	brown fine to medium quartz SAND
2-4	(same)
4-6	(same)
6-8	brown to gray fine to medium quartz SAND
8-10	(same)
10-12	(same)
12-14	(same)
14-16	brown SILT some clay.
16-18	gray CLAY trace silt
18-20	gray CLAY trace silt
20-22	brown CLAY trace silt
22-24	orange-brown fine to medium quartz SAND
24-26	(same)
26-28	gray fine quartz SAND trace silt
28-30	(same)
30-32	(same)
32-34	(same)
34-36	(same)
36-38	(same)
38-40	gray fine to medium quartz SAND trace subrounded quartz gravel

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: MW-12 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 10-12-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown fine to medium quartz SAND trace silt
2-4	(same)
4-6	(same)
6-8	Wet gray to brown fine to medium quartz SAND
8-10	(same)
10-12	(same)
12-14	Wet gray fine to medium quartz SAND
14-16	Wet gray (trace red, black, white) fine to medium quartz SAND
16-18	(same)
18-20	(same)

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: MW-13 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 10-12-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown SAND trace silt
2-4	(same)
4-6	(same)
6-8	Wet gray fine to medium quartz SAND
8-10	(same)
10-12	(same)
12-14	(same)
14-16	Wet orange-brown fine to medium quartz SAND
16-18	Wet gray fine to medium quartz SAND
18-20	Wet gray fine to medium SAND trace subrounded quartz gravel

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: MW-14 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 9-28-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown fine quartz SAND trace silt
2-4	(Same)
4-6	Moist gray to orange-brown fine quartz SAND little silt
6-8	Dry light brown to orange-brown fine quartz SAND trace silt
8-10	Wet light brown fine quartz SAND
10-12	Wet gray fine quartz SAND little silt
12-14	Wet gray to orange-brown fine to medium quartz SAND
14-16	Wet light brown to orange-brown fine quartz SAND little silt
16-18	Wet orange-brown medium to coarse quartz SAND, trace subangular to subrounded gravel consisting of quartz and gray rock
18-20	(Same)

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: MW-15 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 9-27-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist gray fine quartz SAND trace silt
2-4	(same)
4-6	Moist light brown to orange-brown fine to medium SAND trace silt
6-8	(same)
8-10	Moist orange-brown to gray fine quartz SAND some silt
10-12	Wet gray (trace red, white, black) medium to coarse quartz SAND
12-14	Wet light brown fine quartz SAND trace silt
14-16	Wet light brown to orange-brown medium to coarse quartz SAND trace clear subrounded quartz gravel
16-18	Wet light brown to orange-brown (trace red, black) medium to coarse quartz SAND trace subrounded quartz gravel
18-20	Wet orange-brown medium to coarse quartz SAND, little subrounded to subangular gravel

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: MW-16 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 9-27-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown fine quartz SAND trace silt
2-4	(same)
4-6	(same)
6-8	Moist brown fine quartz SAND little silt
8-10	Moist light brown fine quartz SAND trace silt
10-12	Dry gray to orange-brown SILT little clay
12-14	Moist gray to orange-brown SILT little clay
14-16	Moist gray to orange-brown SILT
16-18	Wet brown to orange-brown fine to medium quartz SAND trace silt
18-20	(same)
20-22	Wet light brown fine to medium quartz SAND
22-24	Wet orange-brown (trace black, white) fine to medium quartz SAND
24-26	(same)

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: MW-17 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 9-28-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown fine quartz SAND trace silt
2-4	(same)
4-6	(same)
6-8	Moist light brown fine quartz SAND
8-10	(same)
10-12	Dry orange-brown to gray fine quartz SAND trace silt
12-14	Dry white fine quartz SAND trace silt
14-16	Moist gray SILT trace clay (on top of) orange-brown fine to medium quartz SAND
16-18	Wet light gray (trace black, white, red) fine to medium quartz SAND trace silt
18-20	Wet orange-brown, gray, brown medium to coarse quartz SAND
20-22	(same)
22-24	Wet orange-brown fine to medium quartz SAND
24-26	(same)

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: MW-18 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 9-27-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown fine SAND trace silt
2-4	(same)
4-6	(same)
6-8	Dry light brown fine quartz SAND
8-10	Dry light gray fine quartz SAND
10-12	(same)
12-14	Moist gray fine quartz SAND trace silt
14-16	Wet light brown to gray fine quartz SAND trace silt
16-18	Wet orange-brown fine to medium quartz SAND trace silt
18-20	Wet light brown (trace black) fine quartz SAND little silt
20-22	(same)

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: MW-19 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 9-23-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown fine quartz SAND trace silt
2-4	(same)
4-6	(same)
6-8	(same)
8-10	(same)
10-12	Dry light brown fine quartz SAND little silt
12-14	Moist orange-brown fine to medium quartz SAND
14-16	Wet orange-brown fine to medium quartz SAND trace subrounded quartz gravel
16-18	Wet orange-brown to light brown medium to coarse quartz SAND trace subrounded quartz gravel
18-20	(same)
20-22	(same)
22-24	Wet light brown fine to medium quartz SAND

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: MW-20 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 10-12-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist light brown fine quartz SAND trace silt
2-4	(Same)
4-6	(Same)
6-8	Wet light gray fine quartz SAND trace silt
8-10	Wet gray to brown (trace black, red) fine to medium quartz SAND
10-12	Wet light brown (trace white, black) fine to medium quartz SAND trace subrounded white quartz gravel
12-14	(same)
14-16	Wet light brown (trace yellow, red, black) medium to coarse quartz SAND, trace subrounded quartz gravel
16-18	Wet light brown fine to medium quartz SAND trace black organic matter
18-20	Wet light brown fine quartz SAND trace silt

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: MW-21 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 9-15-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Dry light brown fine quartz SAND trace silt
2-4	(same)
4-6	Moist light brown fine quartz SAND trace silt, trace quartz gravel
6-8	Moist light brown to gray fine quartz SAND, trace silt, trace gravel
8-10	Moist light brown fine quartz SAND trace silt
10-12	Wet light gray fine to medium quartz SAND trace silt
12-14	(same)
14-16	Wet light gray to light brown fine quartz SAND trace silt
16-18	Wet light gray (trace red, black, white) fine to medium quartz SAND
18-20	(same)

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: MW-22 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 9-23-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown fine quartz SAND trace silt
2-4	(same)
4-6	(same)
6-8	Moist light brown fine quartz SAND trace silt
8-10	(same)
10-12	Wet light brown fine quartz SAND trace silt
12-14	Wet light gray fine quartz SAND trace Subrounded gravel
14-16	(same)
16-18	Wet light gray medium to coarse quartz SAND
18-20	Wet light gray (trace red, black, white) medium to coarse quartz SAND

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: MW-23 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 9-16-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Dry brown fine quartz SAND trace silt
2-4	(Same)
4-6	Dry brown to light brown fine quartz SAND, trace silt, trace black organic matter
6-8	Moist white (some brown) fine quartz SAND trace silt
8-10	Moist gray to orange-brown fine quartz SAND. little silt
10-12	Moist gray to brown fine quartz SAND from 10 to 11 Feet, on top of: Wet, white fine to medium quartz SAND from 11 to 12 feet.
12-14	Wet light gray (trace red, white, black) fine to medium quartz SAND
14-16	Wet light gray (trace red, white, black) fine to medium quartz SAND trace subangular black and clear gravel
16-18	Wet light gray (trace red, white, black) medium to coarse quartz SAND
18-20	(Same)

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: MW-24 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 9-15-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Dry brown fine quartz SAND trace silt
2-4	(same)
4-6	Dry brown fine quartz SAND trace silt
6-8	(same)
8-10	Moist brown to gray fine quartz SAND trace silt, trace subrounded quartz gravel
10-12	(same)
12-14	Moist to wet, light brown fine quartz SAND trace silt
14-16	Wet light brown fine quartz SAND some silt, trace clay
16-18	Wet gray (trace red, black, white) fine quartz SAND trace silt
18-20	Wet gray fine to medium quartz SAND trace subrounded quartz gravel

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: MW-25 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 9-16-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Moist brown fine quartz SAND trace silt
2-4	(Same)
4-6	(Same)
6-8	(Same)
8-10	Moist light gray fine quartz SAND trace silt
10-12	Moist to wet gray fine quartz SAND trace silt
12-14	Wet light gray fine to medium quartz SAND trace subrounded quartz gravel
14-16	(Same)
16-18	Wet light gray to brown (trace red) medium to coarse quartz SAND trace subrounded quartz gravel
18-20	(Same)

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Geologic Log of Boring: MW-26 Page 1 of 1

Site: Inland Bays Regional Wastewater Facilities, Sussex County, Delaware

Client: Sussex County, DE Engineering Department

Drilling company: John D. Hynes & Assoc., Inc. Date: 9-15-2016

Method: hollow-stem auger and split spoon sampling

By: S. Mogilnicki of WRA

depth (ft.)	description
0-2	Dry light brown fine quartz SAND trace silt
2-4	(same)
4-6	Dry orange-brown fine quartz SAND trace silt
6-8	Moist orange-brown fine quartz SAND trace silt
8-10	(same)
10-12	(same)
12-14	Moist light gray fine quartz SAND trace silt
14-16	Wet gray to brown fine quartz SAND trace silt
16-18	Wet brown to gray fine quartz SAND some silt, trace clay
18-20	(same)
20-22	Wet brown to gray fine quartz SAND trace silt
22-24	(same)
24-26	Wet gray fine to medium quartz SAND trace silt

Principal component(s) in CAPITALS.
Minor: and = 35 - 50%, some = 20 - 35%, little = 10 - 20%, trace = 1 - 10%.

Appendix 2

Grain Size Data

JOHN D. HYNES & ASSOCIATES, INC.

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Monitoring Well Installation
Construction Inspection and Materials Testing

Laboratory Test Results
Inland Bays Regional Wastewater Facilities
Project No.: JDH-10/16/279

Boring No./Sample No.	B-1/S3	B-2/S8	B-3/S6	B-3/S8	B-3/S9	B-4/S4	B-4/S6	B-4/S9
Begin Depth (ft.)	4	14	10	14	16	6	10	
End Depth (ft.)	6	16	12	16	18	8	12	
Sieve Size	Percent Passing							
2 ½"								
2"								
1 ½"								
1"								
¾"								
½"		100						
⅜"		99.2	100		100			
No. 4	100	97.9	99.9		99.9	100		100
No. 10	99.8	97.0	99.8		98.9	99.8		99.9
No. 20	98.9	94.8	99.5		92.1	97.8		99.5
No. 40	93.3	55.5	97.6		73.4	93.0		84.9
No. 60	81.0	30.0	85.2		47.0	87.0		28.5
No. 100	66.1	17.9	64.7		26.9	69.9		15.0
No. 200	44.6	12.7	28.9		14.4	50.1		10.2
Liquid Limit				39			40	
Plasticity Index				16			18	
Natural Moisture %	16.9	10.9	18.3	28.1	9.5	15.8	23.0	22.1
Dry Unit Weight (pcf)								

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Monitoring Well Installation
Construction Inspection and Materials Testing

Laboratory Test Results
Inland Bays Regional Wastewater Facilities
Project No.: JDH-10/16/279

Boring No./Sample No.	B-5/S7	B-6/S4	B-6/S9	B-7/S2	B-7/S9	B-8/S9	B-8/S10	B-9/S2
Begin Depth (ft.)	12	6	16	2	16	16	18	2
End Depth (ft.)	14	8	18	4	18	18	20	4
Sieve Size	Percent Passing							
2 ½"								
2"								
1 ½"								
1"								
¾"								
½"								
⅜"			100					100
No. 4	100		98.6	100	100			99.1
No. 10	99.3		97.3	99.8	98.7	100		98.2
No. 20	97.2		91.4	96.0	89.6	99.8		93.1
No. 40	70.2		71.2	79.3	56.0	99.1		72.2
No. 60	65.7		33.6	41.7	25.0	86.3		52.1
No. 100	27.8		14.6	15.1	12.7	26.5		36.0
No. 200	12.0		8.1	4.1	8.3	12.4		25.3
Liquid Limit		36					52	
Plasticity Index		16					26	
Natural Moisture %	20.7	11.7	21.3	3.6	19.2	26.5	27.2	5.1
Dry Unit Weight (pcf)								

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Monitoring Well Installation
Construction Inspection and Materials Testing

Laboratory Test Results
Inland Bays Regional Wastewater Facilities
Project No.: JDH-10/16/279

Boring No./Sample No.	B-10/S5	B-11/S8	B-12/S5	B-13/S6	B-14/S9	B-15/S5	B-15/S8	B-16/S5
Begin Depth (ft.)	8	14	8	10	16	8	14	8
End Depth (ft.)	10	16	10	12	18	10	16	10
Sieve Size	Percent Passing							
2 ½"								
2"								
1 ½"								
1"								
¾"								
½"								
⅜"		100				100	100	100
No. 4	100	99.9	100		100	98.2	99.4	99.9
No. 10	97.2	99.1	99.4	100	99.9	96.1	99.1	98.7
No. 20	92.3	90.6	92.2	99.6	96.5	88.1	94.1	90.1
No. 40	52.3	56.9	59.5	93.2	73.2	66.0	85.2	61.2
No. 60	30.7	23.7	30.6	67.4	73.2	40.7	42.8	33.1
No. 100	17.3	10.2	19.3	30.3	16.8	20.5	17.1	17.9
No. 200	12.5	5.9	13.2	18.3	11.8	13.0	11.5	12.5
Liquid Limit								
Plasticity Index								
Natural Moisture %	17.5	19.8	17.5	25.5	20.5	19.9	25.5	20.0
Dry Unit Weight (pcf)								

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Monitoring Well Installation
Construction Inspection and Materials Testing

Laboratory Test Results
Inland Bays Regional Wastewater Facilities
Project No.: JDH-10/16/279

Boring No./Sample No.	B-16/S7	B-17/S6	B-18/S5	B-18/S8	B-19/S6	B-19/S9	B-20/S7	B-21/S7
Begin Depth (ft.)	12	10	8	14	10	16	12	12
End Depth (ft.)	14	12	10	16	12	18	14	14
Sieve Size	Percent Passing							
2 ½"								
2"								
1 ½"								
1"								
¾"						100		
½"						97.8		
⅜"					100	97.8	100	
No. 4	100			100	98.9	94.2	99.5	100
No. 10	99.6	100		99.7	97.6	77.9	98.9	99.8
No. 20	96.4	99.6		97.2	88.6	52.6	87.0	97.8
No. 40	64.0	96.4		73.3	53.6	26.7	37.5	88.2
No. 60	22.2	97.0		38.6	23.4	14.1	18.7	78.8
No. 100	10.6	26.1		15.0	13.6	7.9	10.9	41.3
No. 200	7.0	16.7		7.0	9.5	5.2	7.6	25.8
Liquid Limit			41					
Plasticity Index			17					
Natural Moisture %	26.0	30.3	21.6	19.4	19.5	12.8	25.4	26.1
Dry Unit Weight (pcf)								

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Monitoring Well Installation
Construction Inspection and Materials Testing

Laboratory Test Results
Inland Bays Regional Wastewater Facilities
Project No.: JDH-10/16/279

Boring No./Sample No.	B-22/S7	B-23/S3	B-23/S7	B-24/S7	B-25/S8	B-26/S10	B-27/S7	B-28/S3
Begin Depth (ft.)	12	4	12	12	14	18	12	4
End Depth (ft.)	14	6	14	14	16	20	14	6
Sieve Size	Percent Passing							
2 ½"								
2"								
1 ½"								
1"								
¾"								
½"								
⅜"	100			100		100		100
No. 4	99.9	100	100	99.9	100	99.7		99.7
No. 10	99.9	99.9	99.5	99.6	99.7	98.1	100	97.3
No. 20	99.8	98.0	94.4	99.2	99.3	97.1	99.9	89.5
No. 40	99.2	67.1	61.2	97.9	94.7	93.3	98.9	56.1
No. 60	96.8	23.0	26.4	92.1	41.9	88.3	58.3	22.9
No. 100	92.0	4.5	14.7	79.9	21.4	83.1	13.5	11.4
No. 200	82.3	1.9	10.8	65.4	17.7	78.6	8.5	8.6
Liquid Limit								
Plasticity Index								
Natural Moisture %	21.1	3.5	22.4	22.0	23.8	25.9	32.0	8.6
Dry Unit Weight (pcf)								

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Monitoring Well Installation
Construction Inspection and Materials Testing

Laboratory Test Results
Inland Bays Regional Wastewater Facilities
Project No.: JDH-10/16/279

Boring No./Sample No.	B-29/S4	B-30/S10	MW-12/S8	MW-13/S6	MW-14/S9	MW-15/S9	MW-16/S6	MW-16/S6
Begin Depth (ft.)	6	18	14	10	16	16	10	10
End Depth (ft.)	8	20	16	12	18	18	12	12
Sieve Size	Percent Passing							
2 ½"								
2"								
1 ½"								
1"			100					
¾"			93.6					
½"			91.2					
⅜"		100	91.2			100		
No. 4	100	99.4	90.6	100	100	99.3		
No. 10	99.6	95.8	89.7	99.8	99.9	98.7		100
No. 20	98.3	78.3	83.2	97.2	94.8	87.0		99.9
No. 40	91.8	38.9	40.2	67.0	56.4	44.5		99.4
No. 60	46.8	16.3	15.3	31.5	28.7	25.8		95.6
No. 100	16.8	10.4	11.2	15.5	15.0	15.7		85.9
No. 200	10.6	7.7	8.5	11.4	10.0	8.1		51.1
Liquid Limit							46	
Plasticity Index							22	
Natural Moisture %	23.3	14.2	16.5	18.2	25.8	19.4	20.9	17.0
Dry Unit Weight (pcf)								

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Monitoring Well Installation
Construction Inspection and Materials Testing

Laboratory Test Results
Inland Bays Regional Wastewater Facilities
Project No.: JDH-10/16/279

Boring No./Sample No.	MW-16/S13	MW-17/S8	MW-17/S9	MW-17/S13	MW-18/S7	MW-18/S9	MW-19/S8	MW-19/S12
Begin Depth (ft.)	24	14	16	24	12	16	14	22
End Depth (ft.)	26	16	18	26	14	18	16	24
Sieve Size	Percent Passing							
2 ½"								
2"								
1 ½"								
1"								
¾"								
½"								
⅜"								100
No. 4	100			100	100	100	100	99.9
No. 10	99.9		100	99.9	99.6	99.6	99.9	99.7
No. 20	99.3		95.7	97.9	98.9	97.9	93.2	97.0
No. 40	89.4		70.5	72.9	82.0	82.1	64.1	86.4
No. 60	37.9		35.6	29.0	27.3	35.0	22.9	51.6
No. 100	13.3		19.1	13.3	15.4	15.9	11.0	18.9
No. 200	8.2		12.6	9.1	10.9	10.7	7.9	12.5
Liquid Limit		36						
Plasticity Index		18						
Natural Moisture %	22.6	19.4	18.6	24.0	23.2	22.7	26.0	20.9
Dry Unit Weight (pcf)								

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Monitoring Well Installation
Construction Inspection and Materials Testing

Laboratory Test Results
Inland Bays Regional Wastewater Facilities
Project No.: JDH-10/16/279

Boring No./Sample No.	MW-20/S8	MW-21/S9	MW-22/S5	MW-22/S7	MW-23/S7	MW-24/S9	MW-25/S5	MW-25/S7
Begin Depth (ft.)	14	16	8	12	12	16	8	12
End Depth (ft.)	16	18	10	14	14	18	10	14
Sieve Size	Percent Passing							
2 ½"								
2"								
1 ½"								
1"								
¾"								
½"	100			100		100		
⅜"	97.6			99.2	100	96.3		
No. 4	87.5	100	100	99.0	99.8	90.2		100
No. 10	75.4	99.4	99.4	98.9	98.1	88.2	100	99.7
No. 20	60.1	94.0	93.4	93.0	88.6	83.2	99.3	95.9
No. 40	34.9	67.8	71.5	50.6	55.6	63.3	90.3	81.1
No. 60	17.1	31.1	43.7	21.9	28.1	28.9	62.4	62.2
No. 100	10.9	15.1	27.2	13.0	16.3	11.1	23.7	35.5
No. 200	8.2	9.1	14.4	9.1	10.2	5.7	14.4	21.6
Liquid Limit								
Plasticity Index								
Natural Moisture %	13.2	21.8	15.6	21.0	21.2	20.1	16.6	20.1
Dry Unit Weight (pcf)								

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Monitoring Well Installation
Construction Inspection and Materials Testing

Laboratory Test Results
Inland Bays Regional Wastewater Facilities
Project No.: JDH-10/16/279

Boring No./Sample No.	MW-25/S9	MW-26/S4	MW-26/S13					
Begin Depth (ft.)	16	6	24					
End Depth (ft.)	18	8	26					
Sieve Size	Percent Passing							
2 ½"								
2"								
1 ½"								
1"								
¾"								
½"			100					
⅜"			98.6					
No. 4	100	100	97.4					
No. 10	98.6	99.4	95.4					
No. 20	92.5	95.9	76.9					
No. 40	62.3	82.2	47.2					
No. 60	22.0	55.5	29.1					
No. 100	12.8	31.8	16.4					
No. 200	9.5	17.1	11.9					
Liquid Limit								
Plasticity Index								
Natural Moisture %	24.5	4.0	20.0					
Dry Unit Weight (pcf)								

Appendix 3

Domestic Well Data

WRA Well Data (06/02/2017)

Coord. #	Permit #	Well Address	Well Owner	Tax Parcel	State Plane Coordinates	TOP OF Well Elevation	Comments
-	-	-	WILLIAM DRAINE	234-21.00-47.00	-	-	UNIMPROVED LOT
1224	NO TAG	26895 MT JOY RD	WILLIAM MERVIN DRAINE	234-21.00-47.02	N 228500.24 E 697920.82	28.13	2" PVC. 0.70' TALL. WELL IS 165' +/- FROM CL OF ROAD. 40'+/- TO THE RIGHT OF DWELLING, BY PUMP HOUSE.
-	-	-	POWER AND LOVE OUTREACH MINISTRIES, INC.	234-21.00-140.00	-		UNIMPROVED LOT
-	-	25709 HOLLYVILLE RD	EDUARDO GARZA & REYNA A. GARZA	234-21.00-140.01	-	-	NO WELL FOUND . NO RESPONSE FROM OWNER
-	-	25728 HOLLYVILLE RD	JUDITH T. KING & H. RICHARD KING	234-21.00-140.02	-	-	NO WELL FOUND . NO RESPONSE FROM OWNER PROBABLY OUTSIDE STUDY AREA
-		24861 LAWSON RD	JANEEN NEAL & STANLEY E. NEAL	234-21.00-141.01	N 232448.52 E 698473.35	37.05	4" PVC. 0.90' TALL. IN FRONT AND TO THE RIGHT OF HOUSE. APPROX. 45' +/- FROM CL OF ROAD.
1205	216406	24847 LAWSON RD	JILL M. GOMEZ	234-21.00-141.02	N 232672.80 E 698524.83	36.99	4" PVC. 0.70' TALL. IN FRONT AND TO THE LEFT OF HOUSE. APPROX. 70' +/- FROM CL OF ROAD.
1207	221821	24835 LAWSON RD	JOSEPH M. MCDONOUGH & ANNA M. MCDONOUGH	234-21.00-141.03	N 232761.43 E 698437.71	37.34	4" PVC. 1.50' TALL. IN FRONT OF HOUSE. APPROX. 70' +/- FROM CL OF ROAD.IN A BUSH.
1210	212692	24814 LAWSON RD	JOHN F. ARTHUR	234-21.00-141.04	N 231945.95 E 698342.31	38.40	4" PVC. 1.10' TALL. BEHIND HOUSE. APPROX. 180' +/- FROM CL OF ROAD.
1198	212693	24894 LAWSON RD	EDWIN F. BOOTH III	234-21.00-141.05	N 232117.18 E 698436.83	37.19	4" PVC. 1.50' TALL. IN FRONT OF HOUSE. APPROX. 55' +/- FROM CL OF ROAD.
1196	213762	24880 LAWSON RD	MIRNA ORTH L.	234-21.00-141.06	N 232274.91 E 698292.78	37.86	4" PVC. 1.30' TALL. BEHIND HOUSE. UNDER SHED ROOF . APPROX. 170' +/- FROM CL OF ROAD.

1200	216222	24866 LAWSON RD	NATHANIEL L. NORWOOD & HOLLY A. NORWOOD	234-21.00-141.07	N 232474.90 E 698382.87	37.58	4” PVC. 1.30’ TALL. IN FRONT OF HOUSE. APPROX. 40’ +/- FROM CL OF ROAD.
1203	215743	24879 LAWSON RD	WILLIAM T. KNOWLES & JULIE ANN KNOWLES	234-21.00-141.08	N 232199.37 E 698537.48	36.84	4” PVC. 1.20’ TALL. IN FRONT OF HOUSE. APPROX. 60’ +/- FROM CL OF ROAD.
1194	191586	24910 HOLLYVILLE RD	MARK D. HESS & PAMELA J. HESS	234-21.00-142.00	N 232169.50 E 698774.44	37.16	4” PVC. 1.40’ TALL. IN FRONT OF HOUSE. APPROX. 120’ +/- FROM CL OF ROAD.
1216	-	-	A. GLADYS BEATTY	234-21.00-142.01	-	-	UNIMPROVED LOT
-	159582	24868 HOLLYVILLE RD	LESA R. HARRIS	234-21.00-143.00	N 232457.77 E 698891.68	35.94	2” PVC. 1.40’ TALL. DIRECTLY BEHIND HOUSE. APPROX. 230’ +/- FROM CL OF ROAD.
1212	112579	24840 HOLLYVILLE RD	EDWARD KLOSOWSKI	234-21.00-143.01			2” PVC. 1.20’ TALL. BEHIND AND TO THE RIGHT OF HOUSE. APPROX. 215’ +/- FROM CL OF ROAD.
1213	-	-	R. ALICE DEATS, TRUSTEE	234-21.00-144.00	-	-	UNIMPROVED LOT.
-	-	-	SUSSEX COUNTY	234-21.00-151.01			UNIMPROVED LOT
-	-	-	SUSSEX COUNTY	234-21.00-151.02	-	-	UNIMPROVED LOT
			SUSSEX COUNTY	234-21.00-151.03			UNIMPROVED LOT
-	-	-	BRIAN L. BURTON	234-21.00-152.00	-	-	UNIMPROVED LOT
-	-	-	FELICIA A. BURTON	234-21.00-152.04	-	-	UNIMPROVED LOT
-	-	-	FELICIA A. BURTON	234-21.00-152.05	-	-	UNIMPROVED LOT
1182	NO TAG	27041 MT JOY RD	EMMA LORETTA ANDRIE	234-21.00-153.00	N 227997.76 E 699193.22	31.09	2” PVC. 1.3’ TALL. DIRECTLY IN FRONT OF HOUSE APPROX. 30’ +/- FROM CL ROAD
1192	NO TAG	27059 MT JOY RD	WILLIAM H. ANDRIE JR.	234-21.00-154.00	N 228013.29 E 699375.31	30.00 GROUND	LOCATION IS GROUND ADJACENT TO WELL. WELL IS IN WELL HOUSE. ACCESS WAS DENIED

1184	NO TAG	27059 MT JOY RD	CALEB J. BAILEY & ANNIE J. BAILEY	234-21.00-155.00	N 227992.34 E 699492.57	31.34	2” PVC. 1.1’ TALL. WELL IS LOCATED AT RIGHT REAR CORNER OF HOUSE.
1219	NO TAG	27077 MT JOY RD 27073 MT JOY RD	CALEB J. BAILEY & ANNIE J. BAILEY	234-21.00-156.00	N 228003.05 E 699577.49	31.09	2” IRON PIPE. FLUSH WITH GROUND. LOCATED BETWEEN TWO TRAILERS. APPROX 150’ FROM CL OF ROAD
-	-	27089 MT JOY RD	PAULA VICIE PINKETT	234-21.00-157.00	-	-	VACANT DWELLING. NO WELL FOUND
1186	84917	27103 MT JOY RD	ELIZABETH D. HARMON	234-21.00-158.00	N 227826.65 E 699781.90	33.45	2” PVC. 1.7’ TALL. IN FRONT OF AND TO THE LEFT OF HOUSE. APPROX. 30’ FROM CL ROAD.
-	-	27113 MT JOY RD	MARL HAYES	234-21.00-159.00	-	-	NO ONE HOME. NO WELL FOUND.
-	-	28001 MT JOY RD	LIZZIE COLLINS	234-21.00-160.00	-	-	SPOKE TO OWNER. DID NOT KNOW LOCATION OF WELL.
-	-	28011 MT JOY RD	THE APOSTOLIC FAITH CHURCH OF JESUS CHRIST THE LORD INC	234-21.00-161.00	-	-	CHURCH. NO WELL FOUND
-	-	28029 MT JOY RD	HENRY T. SMITH HEIRS	234-21.00-162.00	-	-	SPOKE TO RESIDENTS. DID NOT KNOW LOCATION OF WELL
-	-	28039 MT JOY RD	HENRY T. SMITH HEIRS	234-21.00-163.00	-	-	NO ONE HOME . NO WELL FOUND.
1143	-	28051 MT JOY RD	MARY NELSON & SIMON MANNINGS	234-21.00-164.00	N 227580.12 E 700529.82	26.15	WELL BURIED. SHOT TAKEN AT GRADE. APPROX LOCATION AS PER OWNER.
1142	NO TAG	26390 MT JOY RD	PAUL W. KERCHER II & CARRIE E. KERCHER	234-21.00-164.01	N 227532.35 E 700583.50	28.28	2” PVC. 2.2’ TALL. TO THE LEFT OF HOUSE. APPROX. 60’ +/- FROM CL OF MT JOY ROAD.
1140	NO TAG	28703 MT JOY RD	JOANNE HARRIS	234-21.00-165.00	N 227446.48 E 700711.10	27.60	4’ PVC. 0.8’ TALL. LOCATED DIRECTLY IN FRONT OF DWELLING.
1148	-	28091 MT JOY RD	GEORGE E. JOHNSON JR & MARILYN THOMAS	234-21.00-166.00	N 227439.29 E 700871.31	28.24 GROUND	NO ONE HOME. LOCATION AT CORNER OF PUMPHOUSE.
1179	76390	26276 MILLER ST	SHAWN D. N. COLEMAN & PAMELA ANN COLEMAN	234-21.00-172.00	N 228700.47 E 700990.92	30.24	2” PVC. 1.8’ TALL. LOCATED BEHIND AND TO THE LEFT OF HOUSE

1177	NO TAG	26278 MILLER ST	NATHANIEL L. PURNELL	234-21.00-173.00	N 228651.98 E 700966.41	29.01	2“ PVC. 0.7’ TALL. LOCATED BEHIND DWELLING. APPROX. 180’ FROM CL OF ROAD.
1174	86186	-	GERALD F. FOREMAN, JR	234-21.00-174.00	N 228523.52 E 701049.88	28.56	4” PVC. 1.3’ TALL. LOCATED NEAR FRONT RIGHT CORNER OF LOT. APPROX. 50’ FROM CL OF ROAD. NO DWELLING
1172	253363	26296 MILLER ST	MICHAEL VIDELOCK	234-21.00-175.00	N 228398.20 E 701011.62	30.13	4” PVC. 1.5’ TALL. LOCATED DIRECTLY IN FRONT OF HOUSE APPROX. 40’ FROM CL OF ROAD
1168	157574	26312 MILLER ST	GLORIA A. HICKMAN	234-21.00-176.00	N 228312.23 E 700970.02	29.91	2” PVC. 2.7’ TALL. LOCATED DIRECTLY IN FRONT OF HOUSE APPROX. 40’ FROM CL OF ROAD
-	-	-	CLAYTON SNEAD	234-21.00-177.00	-	-	UNIMPROVED LOT
1166	-	26330 MILLER ST	MATTHEW B. JOHNSON	234-21.00-178.00	N 228139.21 E 700889.33	30.11 GROUND	APPROX. LOCATION AS PER OWNER. LOCATION AT GRADE
1165	NO TAG	26336 MILLER ST	JACQUELINE F. MARSHALL	234-21.00-179.00	N 228043.12 E 700844.77	27.73 GROUND	WELL IS COVERD BY AN ORNIMENTAL LIGHTHOUSE. LOCATION AT GROUND ADJACENT TO WELL.
1158	NO TAG	26352 MILLER ST	PAMELA STOKLEY	234-21.00-180.00	N 227891.21 E 700727.72	29.20	2” PVC. 2.7’ TALL. IN FRONT OF AND TO THE LEFT OF HOUSE. APPROX. 93’ FROM CL OR ROAD
1150	NO TAG	26374 MILLER ST	ARINTHIA A. PEACOCK	234-21.00-182.00	N 227745.23 E 700713.81	27.45	2” PVC. 1.5’ TALL. OPPOSITE FRONT RIGHT CORNER OF HOUSE. 47.5’ FROM CL OF ROAD
		-	JANICE L. HOPKINS	234-21.00-183.00	-	-	UNIMPROVED LOT
1152	NO TAG	26363 MILLER ST	GEORGE E. SNOW & SARAH E. SNOW	234-21.00-184.00	N 227771.37 E 700834.13	27.15	4” PVC 0.9’ TALL IN FRONT OF HOUSE ASSUMED ABANDONDED.
1154	NO TAG	26363 MILLER ST	GEORGE E. SNOW & SARAH E. SNOW	234-21.00-184.00	N 227710.96 E 700916.63	28.06	2” PVC. 1.2’ TALL. OPPOSITE BACK RIGHT CORNER OF HOUSE. APPROX 152’ FROM CL OF ROAD
1156	106075	26353 MILLER ST	GEORGE E. SNOW & SARAH E. SNOW	234-21.00-185.00	N 227796.52 E 700976.48	27.76	2” PVC. 1.1’ TALL. BEHIND AND TO THE RIGHT OF HOUSE NEAR PROPERTY LINE. APPROX. 172’ FROM CL OF ROAD
1161	75562	26335 MILLER ST	DAVID L. BRIDDELL	234-21.00-187.00	N 227964.41 E 700947.19	29.90	4” PVC. 1.4’ TALL. NEAR RIGHT FRONT CONER OF LOT. APPROX. 78’ FROM CL OF ROAD.
1163	NO TAG	26335 MILLER ST	DAVID L. BRIDDELL	234-21.00-187.00	N 228069.89 E 700992.23	31.59	4” PVC. 1.6’ TALL. NEAR LEFT SIDE OF PROPERTY. APPROX. 77’ FROM CL OF ROAD.
-	-	-	DAVID L. BRIDDELL	234-21.00-188.00	-	-	UNIMPROVED LOT
-	-	26315 MILLER ST	WILMINGTON SAVINGS FUND SOCIETY	234-21.00-189.00	-	-	ABANDONED HOUSE. NO WELL FOUND

1170	NO TAG	26305 MILLER ST	DAVID NOCKS & TAMEKA R. HICKS	234-21.00-190.00	N 228347.43 E 701072.40	28.48	2’ PVC. 0.8’ TALL. IN FRONT OF LEFT SIDE OF HOUSE. APPROX. 40’ FROM CL OF ROAD.
-	-	-	JOANNE V. HARRIS	234-21.00-191.00	-	-	UNIMPROVED LOT
--	-	-	ASHBURN AT JOHNSONVILLE	234-21.00-394.00	-	-	UNIMPROVED LOT
-	-	-	ASHBURN AT JOHNSONVILLE	234-21.00-395.00	-	-	UNIMPROVED LOT
-	-	-	ASHBURN AT JOHNSONVILLE	234-21.00-396.00	-	-	UNIMPROVED LOT
-	-	-	ASHBURN AT JOHNSONVILLE	234-21.00-397.00	-	-	UNIMPROVED LOT
-	-	-	ASHBURN AT JOHNSONVILLE	234-21.00-398.00	-	-	UNIMPROVED LOT
-	-	-	ASHBURN AT JOHNSONVILLE	234-21.00-399.00	-	-	UNIMPROVED LOT
-	-	-	ASHBURN AT JOHNSONVILLE	234-21.00-400.00	-	-	UNIMPROVED LOT
-	-	-	ASHBURN AT JOHNSONVILLE	234-21.00-401.00	-	-	UNIMPROVED LOT
-	-	-	ASHBURN AT JOHNSONVILLE	234-21.00-402.00	-	-	UNIMPROVED LOT
-	-	-	ASHBURN AT JOHNSONVILLE	234-21.00-403.00	-	-	UNIMPROVED LOT
-	-	-	ASHBURN AT JOHNSONVILLE	234-21.00-404.00	-	-	UNIMPROVED LOT
-	-	-	ASHBURN AT JOHNSONVILLE	234-21.00-419.00	-	-	UNIMPROVED LOT
-	-	-	ASHBURN AT JOHNSONVILLE	234-21.00-420.00	-	-	UNIMPROVED LOT
-	-	-	ASHBURN AT JOHNSONVILLE	234-21.00-421.00	-	-	UNIMPROVED LOT

-	-	-	ASHBURN AT JOHNSONVILLE	234-21.00-422.00	-		UNIMPROVED LOT
-	-	-	ASHBURN AT JOHNSONVILLE	234-21.00-423.00	-	-	UNIMPROVED LOT
-	-	-	ASHBURN AT JOHNSONVILLE	234-21.00-424.00	-	-	UNIMPROVED LOT -
	-	-	ASHBURN AT JOHNSONVILLE	234-21.00-425.00	-	-	UNIMPROVED LOT
1333	-	28979 SYCAMORE LN	JOHN M. AMODEI SR	234-22.00-3.00	N 233490.47 E 704971.41	31.29 GROUND	WELL IN PUMP HOUSE. LOCATED GROUND ADJACENT TO FRONT RIGHT CORNER OF PUMP HOUSE. WELL SHARED WITH 234-22.00-3.20 APPROX 490’ FROM CL OF ROAD.
1315	NO TAG	25148 TOWNSEND RD	MILDRED L. KRAUSE	234-22.00-3.01	N 234236.91 E 706103.01	33.31	2“ PVC. 1.0’ TALL. IN FRONT OF HOUSE. APPROX 86’ FROM CL OF ROAD
-	-	-	H. BRENT MOORE & NANCY H. MOORE	234-22.00-3.03	-	-	THIS PARCEL IS A RIGHT OF WAY
1332	-	28639 HARMONY CEMETERY RD	HUGH ELLIOTT WRIGHT	234-22.00-3.04	N 233154.48 E 704969.84	31.42 GROUND	APPROX. WELL LOCATION AS PER OWNER. WELL IS BELOW GRADE IN FRONT OF GARAGE. 184’+/- FROM CL OF ROAD.
1330	NO TAG	28649 HARMONY CEMETERY RD	CAROL L. TARBOX & WILLIAM TARBOX	234-22.00-3.05	N 233092.99 E 705085.04	31.63	4” IRON PIPE. 0.6’ TALL. 20’ BEHIND RIGHT REAR CORNER OF HOUSE. APPROX. 180’ FROM CL OF ROAD
1335	-	28649 HARMONY CEMETERY RD	DENNIS G. HARRISON & KATHY MAY HARRISON	234-22.00-3.06	N 233762.37 E 704843.10	31.60 GROUND	APPROX. WELL LOCATION AS PER OWNER. WELL IS BELOW GRADE. APPROX. 675’ FROM CL OF ROAD ADJACENT TO PUMP HOUSE.
-	-	-	GARY D. STEWART & KERRY L H STEWART	234-22.00-3.07	-	-	LOT IMPROVED BY GARAGE , THERE IS NO WELL.
1325	8127	25254 TOWNSEND RD	J. LAYTON MOORE & MARGARET E. MOORE	234-22.00-3.08	N 233431.44 E 705588.67	33.53	2” PVC. .60’ TALL. APPROX. 158’ FROM CL OF ROAD IN FRONT OF A VERY LARGE BOAT
-	-	-	RICHARD C. STOUDT, TRUSTEE & BARBARA STOUDT, TRUSTEE	234-22.00-3.09	-	-	UNIMPROVED LOT

1286	NO TAG	28697HARMONY CEMETERY RD	ROBERT G. REBMAN JR & AMY BETH REBMAN	234-22.00-3.10	N 232766.76 E 705478.97	30.52	6” PVC. 0.7’ TALL. LOCATED NEAR FRONT RIGHT CONER OF LOT. APPROX 30’ FROM CL OF TOWNSEND RD.
-	-	28685HARMONY CEMETERY RD	RICHARD C. STOUDT, TRUSTEE & BARBARA STOUDT, TRUSTEE	234-22.00-3.11	-	-	WELL NOT FOUND
-	-	28661HARMONY CEMETERY RD	KEITH J. BRIMMER & KAREN M. BRIMMER	234-22.00-3.12	-	-	WELL NOT FOUND
1339	NO TAG	25208 TOWNSEND RD	AMAR N. SHARMA & MARY A. SHARMA	234-22.00-3.13	N 233741.65 E 705652.65	33.61	4” PVC. 1.4’ TALL. DIRECTLY IN FRONT OF HOUSE. APPROX. 235’ FROM CL OF ROAD.
1337	76073	25234 TOWNSEND RD	EDMUND L. GUDITUS & PATRICIA A. GUDITUS	234-22.00-3.14	N 233630.81 E 705586.14	30.48	2” PVC. 1.1’ TALL. BEHIND AND TO THE RIGHT HOUSE. APPROX. 240’ FROM CL OF ROAD UNDER METAL GRATE.
-	-	-	ELIZIBETH MONTE WOOLEYHAN & ROGER B. WOOLEYHAN	234-22.00-3.15		-	UNIMPROVED LOT
1327	NO TAG	25288 TOWNSEND RD	GERALD C. BROWN & JENNIFER LITTLEFIELD	234-22.00-3.16	N 233085.72 E 705534.35	31.04	2” PVC . 0.8’ TALL. NEAR RIGHT SIDE OF DRIVEWAY. APPROX 80’ FROM CL OF ROAD
1324	157560	25154 TOWNSEND RD	GARY D. STEWART & KERRY HANRAHAN STEWART	234-22.00-3.17	N 234358.79 E 705605.41	33.07	4” PVC. 1.6’ TALL. IN FRONT OF AND TO THE LEFT OF HOUSE. APPROX 600’ FEET FROM CL OF ROAD.
-	-	-	ANTHONY E. SING & CATHY F. SING & GARY STEWART & KERRY H. STEWART	234-22.00-3.18	-	-	UNIMPROVED LOT
1333	-	29003 TOWNSEND RD	JOHN M. AMODEI JR & LAUREN M. AMODEI	234-22.00-3.20	N 233490.47 E 704971.41	31.29 GROUND	WELL IN PUMP HOUSE. LOCATED GROUND ADJACENT TO FRONT RIGHT CORNER OF PUMP HOUSE. WELL SHARED WITH 234-22.00-3.00 APPROX 490’ FROM CL OF ROAD.
-	-	-	JOHN M. AMODEI SR	234-22.00-3.21	-	-	THIS PARCEL IS A RIGHT OF WAY

1326	NO TAG	25270 TOWNSEND RD	DUSTIN B. THIBAULT & KRISTY L. THIBAULT	234-22.00-3.22	N 233179.10 E 705549.29	30.95	2” PVC. 1.4’ TALL. APPROX. 85’ FROM CL OF ROAD NEXT TO DRIVEWAY. APPROX. 110’ FROM CL OF ROAD.
-	-	-	DUSTIN B. THIBAULT & KRISTY L. THIBAULT	234-22.00-3.23	-	-	THIS PARCEL IS A RIGHT OF WAY
1317	193599	29165 KRAUSE LN	MARY LOU KRAUSE	234-22.00-3.26	N 234901.61 E 705530.52	32.91	4” PVC. 1.0’ TALL. BEHIND AND TO THE LEFT OF HOUSE NEAR END OF DRIVE. HOUSE IS APPROX. 1000’ FROM COUNTY ROAD ON KRAUSE LANE.
1321	25180	29457 KRAUSE LN	ANDREW W. MACNAMARA & ELIZABETH M. MAIN	234-22.00-3.29	N 234689.27 E 705671.42	30.68	4” PVC. 1.5’ TALL. BEHIND AND TO THE RIGHT OF SMALL YELLOW SHED. HOUSE IS APPROX. 700’ FROM COUNTY ROAD ON KRAUSE LANE.
-	-	-	MMW INVESTMENTS LLC	234-22.00-4.00	-	-	UNIMPROVED LOT
1313	180216	25130 TOWNSEND RD	B&B LAND CORP.	234-22.00-4.01	N 234462.58 E 706139.64	32.35	2” PVC. 1.0’ TALL. BEHIND HOUSE IN FRONT OF POOLNEXT TO POOL PUMP. APPROX. 165’ FROM CL OF ROAD.
1311	NO TAG	25118 TOWNSEND RD	JAMES E. DESHAZO & LISA A. DESHAZO	234-22.00-4.02	N 34635.23 E 706107.18	32.64	4” PVC. 1.3’ TALL. BEHIND HOUSE. BESIDE AUTO SHOP. BEHIND SMALL SHED. APPROX. 280’ FROM CL OF ROAD.
1307	196927	25094 TOWNSEND RD	RICHARD P. BEAUDOIN	234-22.00-4.03	N 234789.38 E 706259.18	32.07	2” PVC. 1.5’ TALL. BEHIND AND TO THE RIGHT OF HOUSE. APPROX. 220’ FROM CL OF ROAD.
1309	205781	25076 TOWNSEND RD	FRANCIS J. GEORGE & LINDA P. GEORGE	234-22.00-4.04	N 234848.71 E 706283.34	30.50	4” PVC. 0.7’ TALL. BEHIND AND TO THE LEFT OF HOUSE NEXT TO A SHED. APPROX. 230’ FROM CL OF ROAD.
-	-	-	DAWN M. KERR	234-22.00-4.05	-	-	UNIMPROVED LOT
1305	211264	25046 TOWNSEND RD	FERN T. HAUG	234-22.00-4.06	N 235106.93 E 706425.64	30.75	4” PVC. 1.0’ TALL. BEHIND HOUSE NEXT TO THE FRONT LEFT CORNER OF A LARGE METAL OUT BUILDING. APPROX. 230’ FROM CL OF ROAD.
1303	NO TAG	25046 TOWNSEND RD	GARY ALLEN LAMBERT, SR. & VICTORIA LAMBERT	234-22.00-4.07	N 235255.51 E 706551.77	32.48	4” PVC. 1.5’ TALL. OPPOSITE BACK LEFT CORNER OF HOUSE NEAR PROPERTY LINE. APPROX. 195’ FROM CL OF ROAD
1300	246193	25016 TOWNSEND RD	JULIA B. ELLIS-HALL	234-22.00-4.08	N 235360.29 E 706761.92	32.15	4” PVC. 2.0 TALL. IN FRON OF HOUSE. APPROX. 60’ FROM CL OF ROAD
1350	NO TAG	25016 TOWNSEND RD	CHARLES E. MAIN SR	234-22.00-5.00	N 231813.63 E 705055.04	29.99	4” PVC. 0.8’ TALL. OPPOSITE RIGHT FRONT CORNER OF HOUSE NEXT TO DRIVEWAY. APPROX. 100’ FROM CL OF ROAD.
			SUSSEX COUNTY	234-22.00-7.00			
			SUSSEX COUNTY	234-22.00-8.00			

-	-	-	HARMONY CEMETERY INC	234-22.00-9.00	-	-	CEMETERY NO WELL FOUND
-	-	-	HARMONY CEMETERY INC	234-22.00-10.02	-	-	UNIMPROVED LOT
1260	-	26405 MT JOY ROAD	DONALD B. CARMINE & NATOSHA N. CARMINE	234-22.00-17.00	N 228495.52 E 708467.89	31.43	4” PVC. 1.1’ TALL. DIRECTLY OPPOSITE RIGHT SIDE OF HOUSE. APPROX 600’ FROM CL OF MT JOY ROAD. TAG NOT LEGIBLE
1251	-	28799 MT JOY ROAD	WILLIAM E. STREET	234-22.00-17.01	N 228151.66 E 707668.18	25.89 GROUND	WELL INSIDE OF PUMPHOUSE. LOCATED SOUTHWEST CORNER OF PUMPHOUSE AT GRADE.
1254	NO TAG	28855 MT JOY ROAD	CAROL A. STRIPLING	234-22.00-17.02	N 227964.20 E 708208.81	26.25	2” PVC. 0.7’ TALL. NEAR RIGHT FRON CORNER OF LOT. APPROX. 30’ FROM CL LINE OF ROAD.
1248	-	28755 MT JOY ROAD	JENNIE A. AMES	234-22.00-17.03	N 228097.15 E 707182.58	27 .89 GROUND	WELL IS IN PUMPHOUSE. LOCATED FRONT LEFT CORNER OF PUMPHOUSE AT GRADE.
-	-	MARKS LANE	BRIDGETTE M. WROTEN	234-22.00-17.04	-	-	THIS IS A RIGHT OF WAY
1252	NO TAG	28825 MT JOY ROAD	WILLIAM E. STREET	234-22.00-17.05	N 227992.15 E 707934.12	26.75	2”PVC. 1.1’ TALL. APPROX. 30 FROM Cl OF ROAD
1256	NO TAG	28839 MT JOY ROAD	CLAYTON M. SAMPLE & KATINA SAMPLE	234-22.00-17.06	N 227975.38 E 708070.55	26.90	2” PVC. 2.0’ TALL. APPROX 30’ FROM CL OR ROAD. NEAR RIGHT FRONT CORNER. OF LOT.
1294	-	30013 MARKS LANE	SALLY B. MARKS	234-22.00-17.07	N 228392.03 E 707716.81	24.82 GROUND	WELL UNDER ORNIMENTAL LIGHTHOUSE APPROX. 400’ FROM CL OF COUNTY ROAD. NOT ACCESSIBLE. LOCATION IS GROUND ADJACENT TO WELL.
-	-	-	SALLY B. MARKS	234-22.00-17.08	-	-	UNIMPROVED LOT
1270	NO TAG	31000 AYERS LANE	MILTON T. AYERS	234-22.00-17.09	N 228546.65 E 707305.93	37.67	2” PVC. 0.50 TALL. WELL IS OPPOSITE THE NORTH END OF FIRST MOBILE HOME. APPROX. 520’ FROM CL OF COUNTY ROAD
1272	98258	31002 AYERS LANE	MILTON T. AYERS	234-22.00-17.09	N 228526.18 E 707443.33	43.39	4” PVC. 1.0’ TALL. WELL IS BEHIND SECOND MOBILE HOME IN A WOODEN BOX. APPROX. 520’ FROM CL OF COUNTY ROAD
1293	NO TAG	30021 MARKS LANE	BRIDGETTE M. WROTEN	234-22.00-17.10	N 228807.51 E 707927.21	26.37	2” PVC. 0.7’ TALL. BEHIND GARAGE. APPROX 840’ FROM CL OF COUNTY ROAD.

1249	NO TAG	28781 MT JOY ROAD	CAROLYN N. JONES	234-22.00-17.11	N 228050.41 E 707363.20	26.54	4” PVC. 0.8’ TALL. APPROX. 30’ FROM CL OF COUNTY ROAD ON LEFT SIDE OF DRIVEWAY.
1258	NO TAG	28867 MT JOY ROAD	YOUNG JE BYUN	234-22.00-18.00	N 227961.46 E 708298.81	26.87	4” PVC. 1.3’ TALL. APPROX. 30’ FROM CL OF ROAD OPPOSITE RIGHT FRONT CORNER OF HOUSE.
-	-	-	PRISCILLA LANE	234-22.00-28.00	-	-	UNIMPROVED LOT
1359	154209	25400 TOWNSEND ROAD	PHYLLIS A. WILLIS	234-22.00-29.00	N 232073.17 E 704949.58	30.35	4’ PVC. 1.7’ TALL. LEFT SIDE OF LOT BEHIND GARAGE. APPROX. 280’ FROM CL OF ROAD.
1348	NO TAG	25388 TOWNSEND ROAD	WILLIAM R. ZEGLIN	234-22.00-30.00	N 232340.21 E 704922.73	33.55	4’ PVC. 1.2’ TALL. RIGHT SIDE OF LOT. TO THR RIGHT OF CAR REPAIR SHOP. APPROX. 400’ FROM CL OF ROAD.
1346	15840	29627 QUIET WOODS ROAD	LINDA F. SAVAGE	234-22.00-31.00	N 232454.17 E 704962.37	32.31	4” PVC. 0.8’ TALL. APPROX 400’ FROM CL OF COUNTY ROAD. TO THE LEFT OF QUIET WOODS ROAD.
1344	251579	29649 QUIET WOODS ROAD	JOSHUA R. LYNN	234-22.00-31.01	N 232496.33 E 704965.89	32.21	4” PVC. 1.2’ TALL. APPROX 420’ FROM CL OF COUNTY ROAD. TO THE LEFT OF QUIET WOODS ROAD.
1342	59720	25350 TOWNSEND ROAD	RICHARD E. CLINE & CYNTHIA L. CLINE	234-22.00-32.00	N 232526.88 E 705213.24	30.39	4” PVC 0.8’ TALL. BEHIND AND IN LINE WITH RIGHT SIDE OF HOUSE. ABOUT 30’ FROM HOUSE
1286	172791	28688 HARMONY CEMETARY ROAD	HORACE WRIGHT & LUCILLE WRIGHT	234-22.00-33.00	N 232607.07 E 705240.55	29.74	4” PVC. 0.7’ TALL. BEHIND AND TO THE RIGHT OF HOUSE. APPROX 190’ FROM CL OF ROAD.
1288	NO TAG	28668 HARMONY CEMETARY ROAD	WILMA L. BESNOSKA	234-22.00-34.00	N 232735.73 E 705086.39	30.15	4” PVC. 1.0’ TALL. NEXT TO DRIVEWAY. APPROX 140’ FROM CL OF ROAD.
1290	111860	28658 HARMONY CEMETARY ROAD	PAULA DENISE SHAMBLIN	234-22.00-35.00	N 232795.66 E 705000.61	29.58	2” PVC. 0.6’ TALL. DIRECTLY IN FRONT OF HOUSE. APPROX 120’ FROM CL OF ROAD.
-	-	-	WILLIAM T. HURDLE III & ELIZABETH C. HURDLE	234-16.00-26.00	-	-	UNIMPROVED LOT
1295	216342	24906 TOWNSEND ROAD	WILLIAM T. HURDLE III & ELIZABETH C. HURDLE	234-16.00-26.01	N 236242.36 E 707544.81	28.38	4’ PVC. 2.0’ TALL. BEHIND HOUSE. IN LINE WITH FRONT OF GARAGE. APPROX 250’ FROM CL OF ROAD.
1297	230152	24903 TOWNSEND ROAD	SUSAN M. FISHER	234-16.00-26.02	N 235870.90 E 707712.00	33.90	4’ PVC. 1.0’ TALL. BEHIND AND IN LINE WITH RIGHT SIDE OF HOUSE. APPROX. 180’ FROM CL OF ROAD.

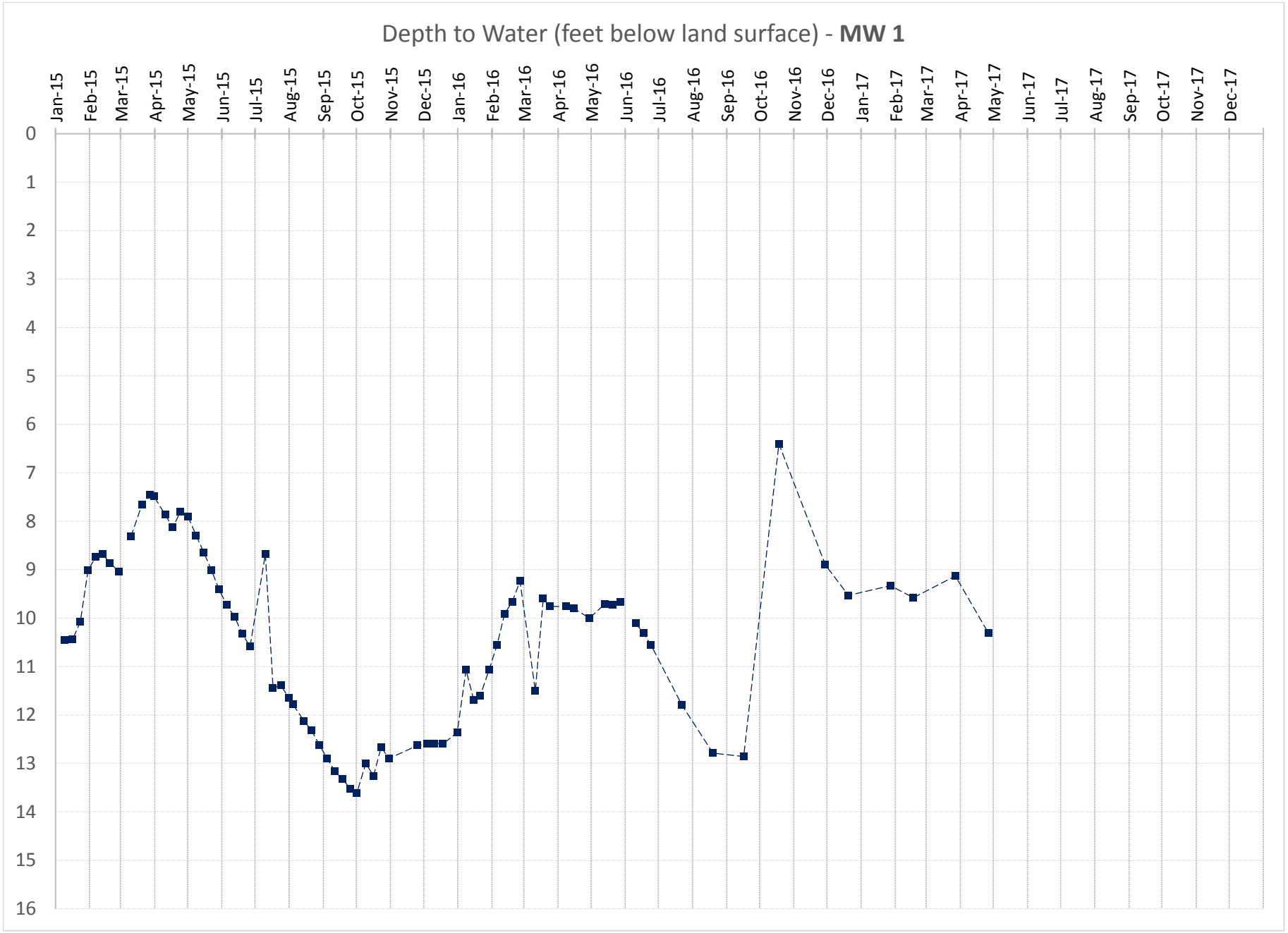
-	-	-	MMW, INVESTMENTS LLC	234-16.00-26.03	-	-	UNIMPROVED LOT
-	-	-	NEW DOUBLE EAGLE FARMS LLC	234-16.00-797.00	-	-	UNIMPROVED LOT
-	-	-	NEW DOUBLE EAGLE FARMS LLC	234-16.00-798.00	-	-	UNIMPROVED LOT
-	-	-	MOUNTAIRE FARMS OF DELAWARE INC	234-28.00-1.00	-	-	UNIMPROVED LOT
-	-	-	MOUNTAIRE FARMS OF DELAWARE INC	234-28.00-2.00	-	-	UNIMPROVED LOT
-	--	-	MOUNTAIRE FARMS OF DELAWARE INC	234-28.00-3.00	-	-	UNIMPROVED LOT
-	-	-	DELMARVA POWER AND LIGHT CO	234-28.00-18.01	-	-	UNIMPROVED LOT
1228	NO TAG	26642 MARYLAND CAMP ROAD	PATRICK MILLER & STEPHEN MILLER	234-28.00-18.02	N 226860.67 E 706665.47	26.68	4” PVC. 1.0’ TALL. DIRECTLY IN FRONT OF HOUSE. APPROX 140’ FROM CL OF ROAD.
1232	NO TAG	26638 MARYLAND CAMP ROAD	STEVEN W. LAWVER & KATHY D. LAWVER	234-28.00-177.00	N 227071.67 E 707091.44	26.69	2” PVC. 0.5’ TALL. APPROX 25’ FROM CL OF ROAD. JUST TO THE RIGHT OF THE DRIVEWAY.
1235	100294	26584 MARYLAND CAMP ROAD	GARY A. FOWLER & ARLENE FOWLER	234-28.00-178.00	N 227212.87 E 707284.44	26.48	2” PVC. 1.0’ TALL. NEAR LEFT FRON CORNER OF LOT. APPROX 38’ FROM CL OF ROAD.
-	-	-	LONG NECK BUILDERS INC	234-28.00-179.00	-	-	UNIMPROVED LOT
1237	81006	26584 MARYLAND CAMP ROAD	ROBERT E. MERRY JR	234-28.00-180.00	N 227442.68 E 707552.41	26.25	4” PVC. 1.0’ TALL. IN FRONT OF RIGHT SIDE OF HOUSE. APPROX. 50’ FROM CL ROAD.
1239	80606	26584 MARYLAND CAMP ROAD	WILLIAM B. SZLEMKO & DOREEN A. SZLEMKO	234-28.00-181.00	N 227527.66 E 707668.57	26.61	2” PVC. 2.0’ TALL. DIRECTLY IN FRONT OF HOUSE. APPROX 50’ FROM CL OF ROAD.
-	-	-	RAMONA A. JEANDELL	234-28.00-182.00	-	-	UNIMPROVED LOT
1243	80035	26584 MARYLAND CAMP ROAD	ZEYLA J. ESCUDERO DE RUEDA	234-28.00-183.00	N 227650.73 E 707852.88	25.42	2” PVC. 1.5’ TALL OPPOSITE FRONT LEFT OF HOUSE. APPROX. 35’ FROM CL OF ROAD.

1245	80607	28840 MT JOY ROAD	TODD R. KIRCHOFF 7 THERESA E. KIRCHOFF	234-28.00-184.00	N 227870.75 E 708092.90	26.44	2” PVC. 1’ TALL. DIRECTLY IN FRONT OF HOUSE IN BIRD BATH PEDESTAL. APPROX. 70’ FROM CL OF MT JOY ROAD.
1262	172908	28822 MT JOY ROAD	ELLA M. COLLICK BAILEY	234-28.00-185.00	N 227934.60 E 707766.67	27.04	4” PVC. .1’ TALL. NEAR FRONT RIGHT CORNER OF LOT. APPROX. 40’ FROM CL OF ROAD.
1264	NO TAG	28804 MT JOY ROAD	MICHAEL F. DOLLAR & EVA M. DOLLAR	234-28.00-186.00	N 227935.79 E 707662.54	28.45	4’ PVC. 1.1’ TALL. OPP RIGHT FRONT CORNER OF THE HOUSE. APPROX 40’ FROM THE CENTER OF THE ROAD.
1266	98166	28790 MT JOY ROAD	LARRY L. DAVIS & LINDA A. DAVIS	234-28.00-187.00	N 27939.88 E 707509.95	26.73	2” PVC. 0.75’ TALL. OPP. RIGHT FRONT CORNER OF HOUSE. APPROX 60’ FROM CL OF ROAD.
1268	-	28774 MT JOY ROAD	AUDREY E. BASS	234-28.00-188.00	N 227959.47 E 707369.58	28.19 GROUND	WELL INSIDE ORNIMENTAL LIGHTHOUSE. NOT ACCESSABLE. LOCATION AT GROUND ADJACENT TO WELL. APPROX. 60’ FROM CL OF ROAD.
1269	99013	28760 MT JOY ROAD	JEFFREY L. LESSIG SR & ROSE M. LESSIG	234-28.00-189.00	N 227953.70 E 707266.04	27.82 GROUND	2” PVC. 0.5’ TALL. IN FRONT OF LEFT SIDE OF HOUSE INSIDE DECORATIVE WELL. LOCATION AT GROUND APPROX 75’ FROM CL OF ROAD. ADJACENT TO WELL.
1230	86150	26638 MARYLAND CAMP ROAD	STEPHEN B. CORDREY & MICHAEL S. CORDREY	234-28.00-190.00	N 226930.58 E 706777.03	27.65	2” PVC. 0.7’ TALL. DIRECTLY IN FRONT OF HOUSE. APPROX. 125’ FROM CL OF ROAD.
1281	-	28642 MT JOY ROAD	GEORGE A. HUNTER SR & CHRISTINE L. HUNTER	234-28.00-191.00	N 227626.69 E 706147.00	27.57 GROUND	WELL INSIDE OF ORNIMENTAL LIGHTHOUSE. NOT ACCESSABLEAPPROX. 240’ FROM CL OF ROAD. LOCATED GROUND ADJACENT TO WELL.
1279	87483	28658 MT JOY ROAD	JAMES E. WELSH & ADALINE B. WELSH	234-28.00-192.00	N 227659.81 E 706441.26	27.45	2” PVC. 1.5’ TALL. DIRECTLY BEHIND HOUSE APPROX 250’ CROM CL OF ROAD.
1278	-	28672 MT JOY ROAD	BARBARA L. WELSH	234-28.00-193.00	N 227622.88 E 706308.57	27.45 GROUND	WELL DIRECTLY BEHIND HOUSE INSIDE A DECORATIVE WINDMILL. APPROX. 260’ FROM CL OF ROAD. WELL NOT ACCESSABLE. LOCATED GROUND ADJACENT TO WELL.
-	-	28692 MT JOY ROAD	MERRILL P. HORNE & PRISCILLA L. HORNE	234-28.00-194.00	-	-	OWNER REFUSED ACCESS.
1276	83899	28702 MT JOY ROAD	DIANE LUTZ	234-28.00-195.00	N 227705.29 E 706690.44	28.27	4” PVC. 1.1’ TALL. BEHIND AND OPPOSITE BACK RIGHT CONER OF HOUSE. APPROX. 240’ FROM CL OF ROAD.
1274	82421	28720 MT JOY ROAD	GERARD C. FLAHERTY & DEBORAH L. FLAHERTY	234-28.00-196.00	N 227913.08 E 706911.64	28.27	2” PVC. 1.2’ TALL APPROX. 60’ FROM CL OF ROAD. NEXT TO DRIVEWAY.

1364	86145 MW-1	COUNTY PROPERTY	SUSSEX COUNTY	234-22.00-12.00	N 235099.75 E 709525.39	29.14	4” PVC. 2.8’ TALL. LOCATED APPROX 3,200’ DUE NORTH OF THE INLAND BAYS OFFICE ALONG A SMALL DIRT ROAD IN A PATCH OF TREES. JUST EAST OF A BORROW PIT.
1365	238969 MW-25	COUNTY PROPERTY	SUSSEX COUNTY	234-22.00-16.00	N 227969.73 E 708492.28	27.55	4’ METAL CASEING. 2.4’ TALL LOCATED APPROX. 70’ NORTH OF THE CENTERLINE OF MT JOY ROAD. APPROX 200’ EAST OF 28867 MT JOY ROAD
1367	238967 MW-23	COUNTY PROPERTY	SUSSEX COUNTY	234-22.00-16.00	N 228988.61 E 708618.95	29.66	4’ PVC. 2.5’ TALL. APPROX 1100’ NORTH OF THE CENTERLINE OF MT JOY ROAD . ADJACENT TO 28867 MT JOY ROAD.
1373	86150 MW-6	COUNTY PROPERTY	SUSSEX COUNTY	234-22.00-16.00	N 231489.25 E 708004.57	37.07	6” PVC. 2.2’ TALL. APPROX 170’ SOUTH OF THE CENTERLINE OF INLAND BAYS ROAD WITHIN THE DELMARVA POWER RIGHT OF WAY.
1370	208213 MW-11	COUNTY PROPERTY	SUSSEX COUNTY	234-22.00-10.00	N 233223.62 E 707185.07	45.42	4” METAL. 1.9’ TALL. APPROX 1500’ NORTH OF INLAND BAYS ROAD ON AN UNIMPROVED ROAD THROUGH THE WOODS. ENTRANCE TO ROAD IS APPROX 525’ WEST OF CENTERLINE OF DELMARVA POWER RIGHT OF WAY

Appendix 4

Water Level Data


Depth to Water (feet below land surface) - MW 1
Jan-15
Feb-15
Mar-15
Apr-15
May-15
Jun-15
Jul-15
Aug-15
Sep-15
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Mar-16
Apr-16
May-16
Jun-16
Jul-16
Aug-16
Sep-16
Oct-16
Nov-16
Dec-16
Jan-17
Feb-17
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Apr-17
May-17
Jun-17
Jul-17
Aug-17
Sep-17
Oct-17
Nov-17
Dec-17
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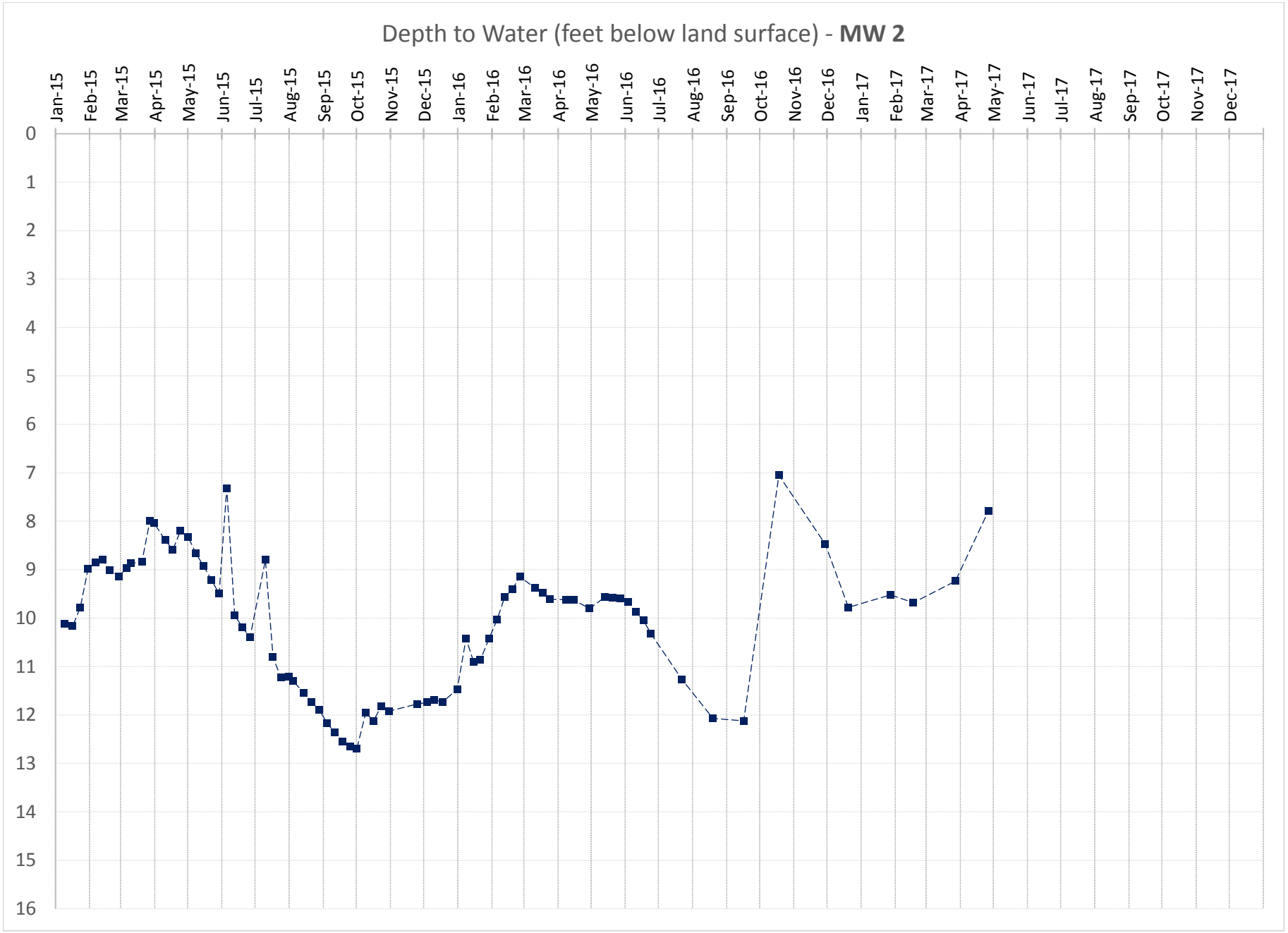
Depth to Water (feet below land surface) - MW 2
Jan-15
Feb-15
Mar-15
Apr-15
May-15
Jun-15
Jul-15
Aug-15
Sep-15
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Mar-16
Apr-16
May-16
Jun-16
Jul-16
Aug-16
Sep-16
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May-17
Jun-17
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Oct-17
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Dec-17
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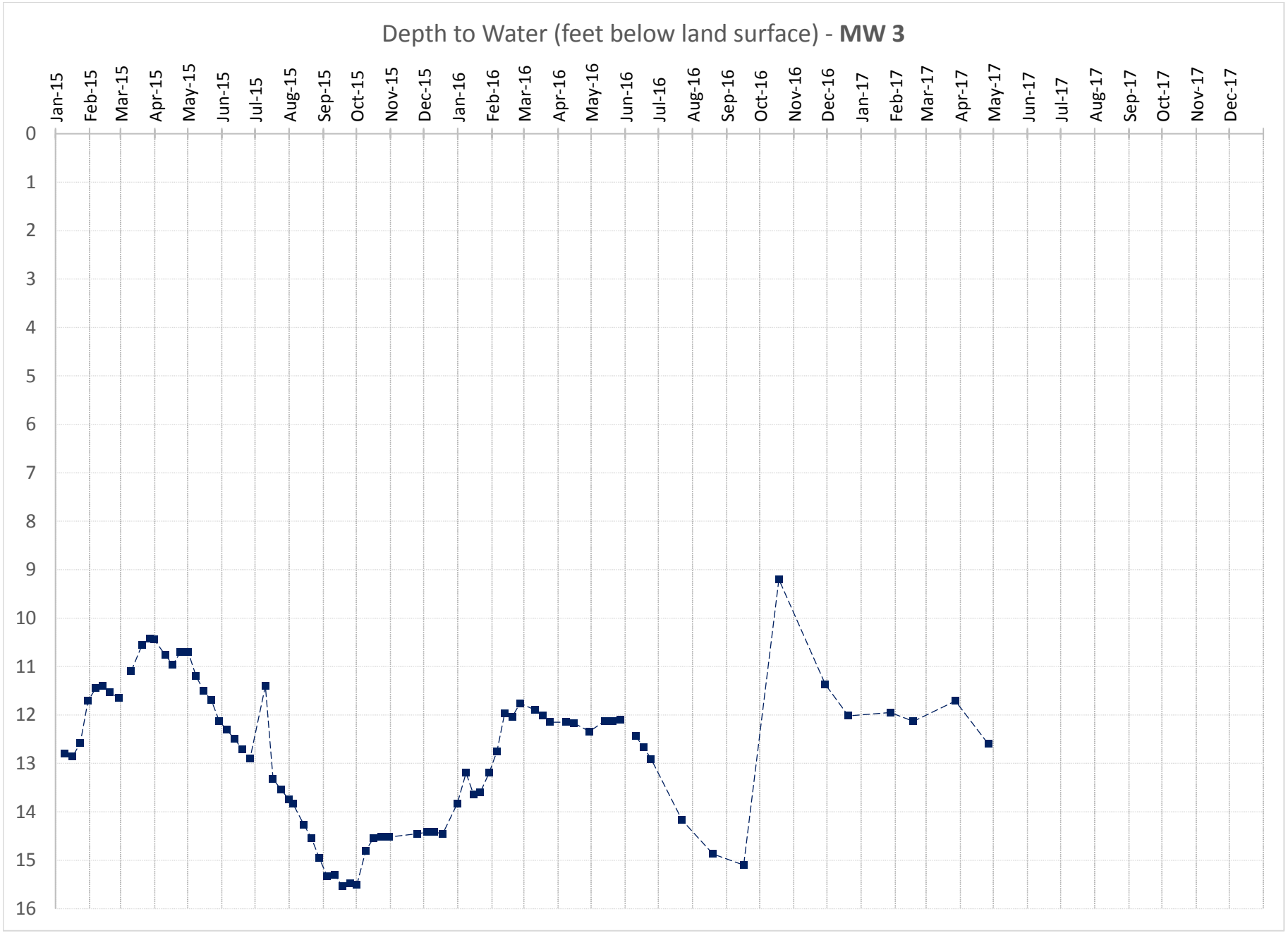
Depth to Water (feet below land surface) - MW 3
Jan-15
Feb-15
Mar-15
Apr-15
May-15
Jun-15
Jul-15
Aug-15
Sep-15
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Nov-15
Dec-15
Jan-16
Feb-16
Mar-16
Apr-16
May-16
Jun-16
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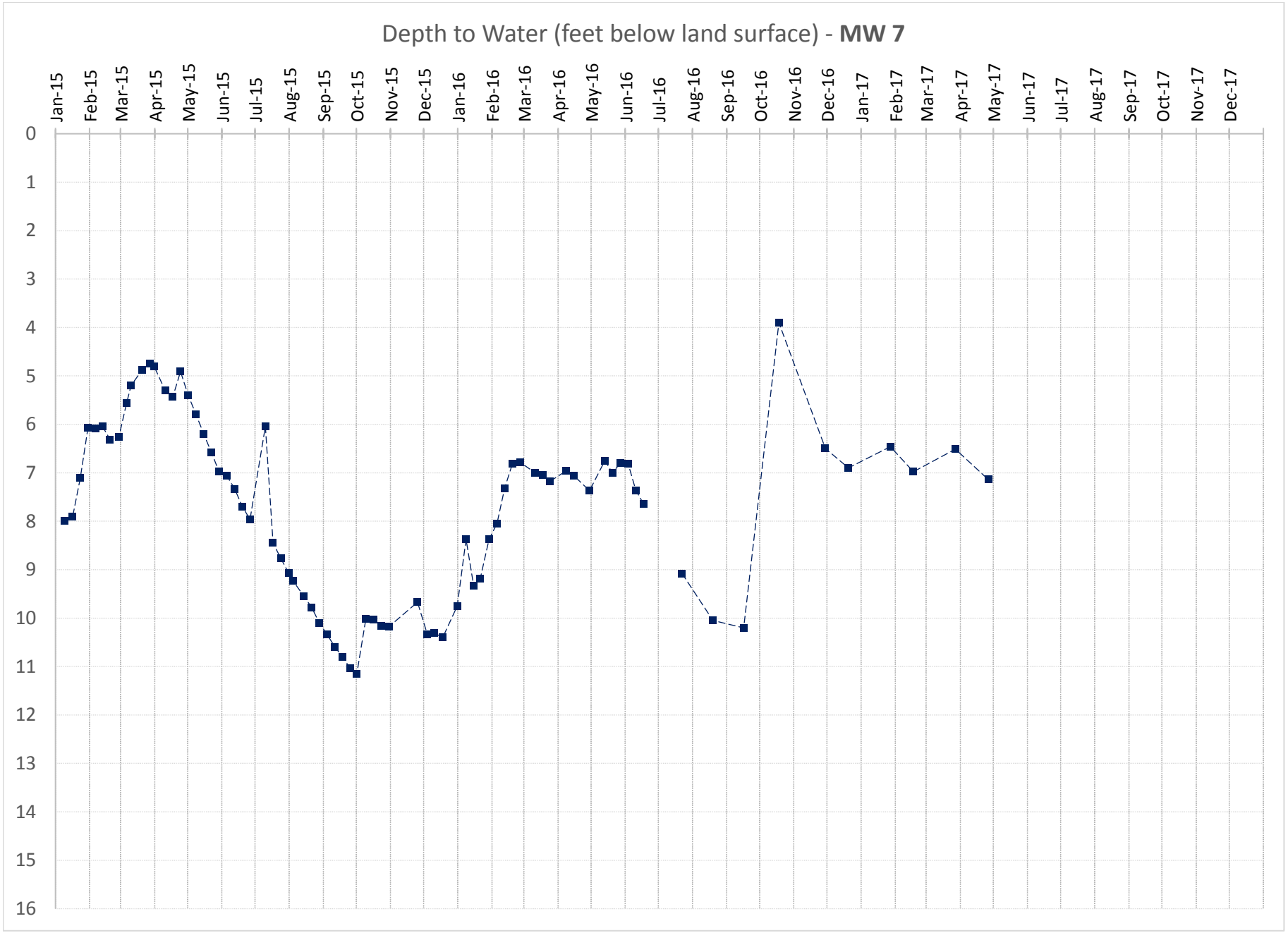
Depth to Water (feet below land surface) - MW 7
Jan-15
Feb-15
Mar-15
Apr-15
May-15
Jun-15
Jul-15
Aug-15
Sep-15
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Nov-15
Dec-15
Jan-16
Feb-16
Mar-16
Apr-16
May-16
Jun-16
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Aug-16
Sep-16
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Nov-16
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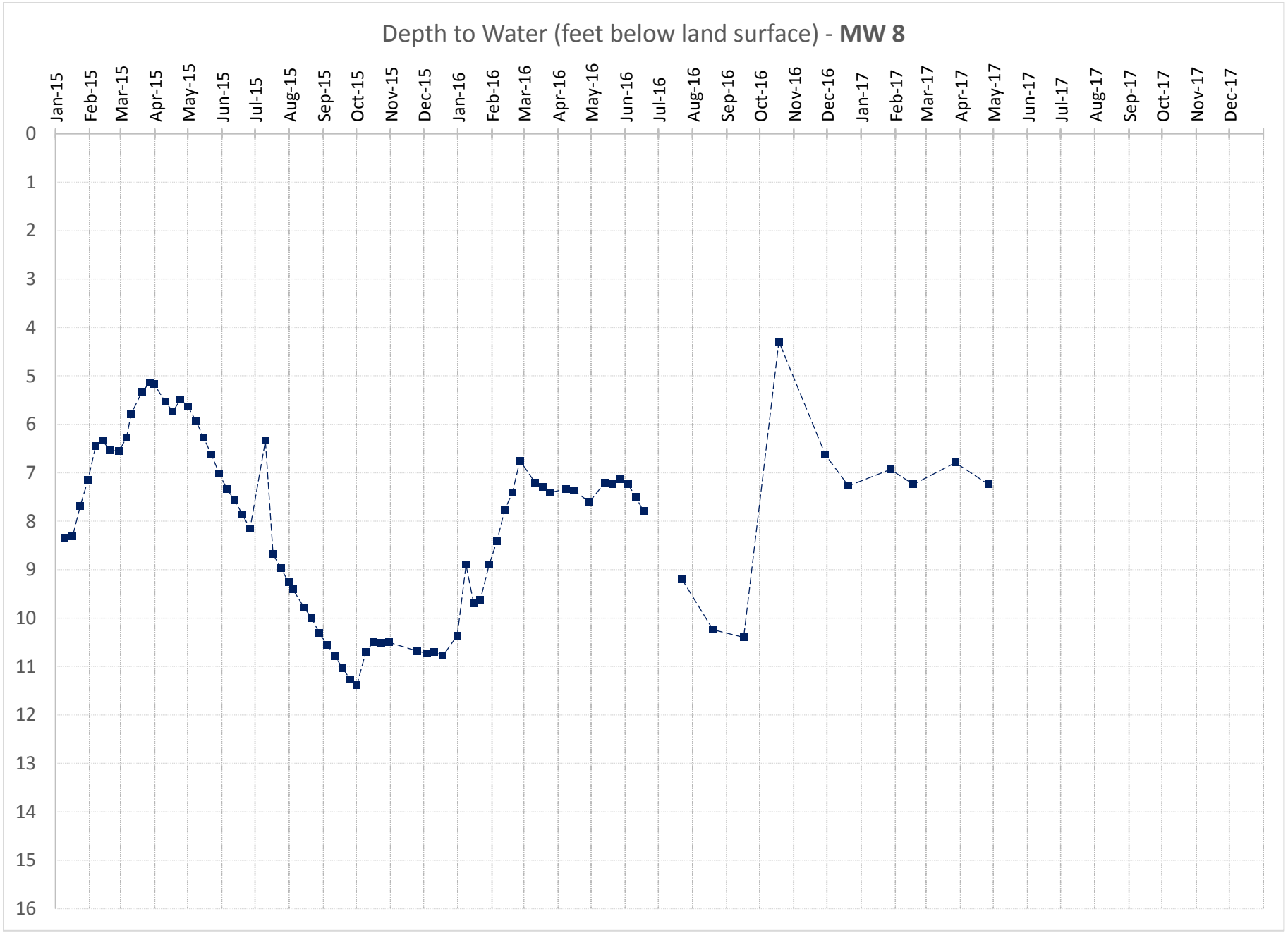
Depth to Water (feet below land surface) - MW 8
Jan-15
Feb-15
Mar-15
Apr-15
May-15
Jun-15
Jul-15
Aug-15
Sep-15
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Nov-15
Dec-15
Jan-16
Feb-16
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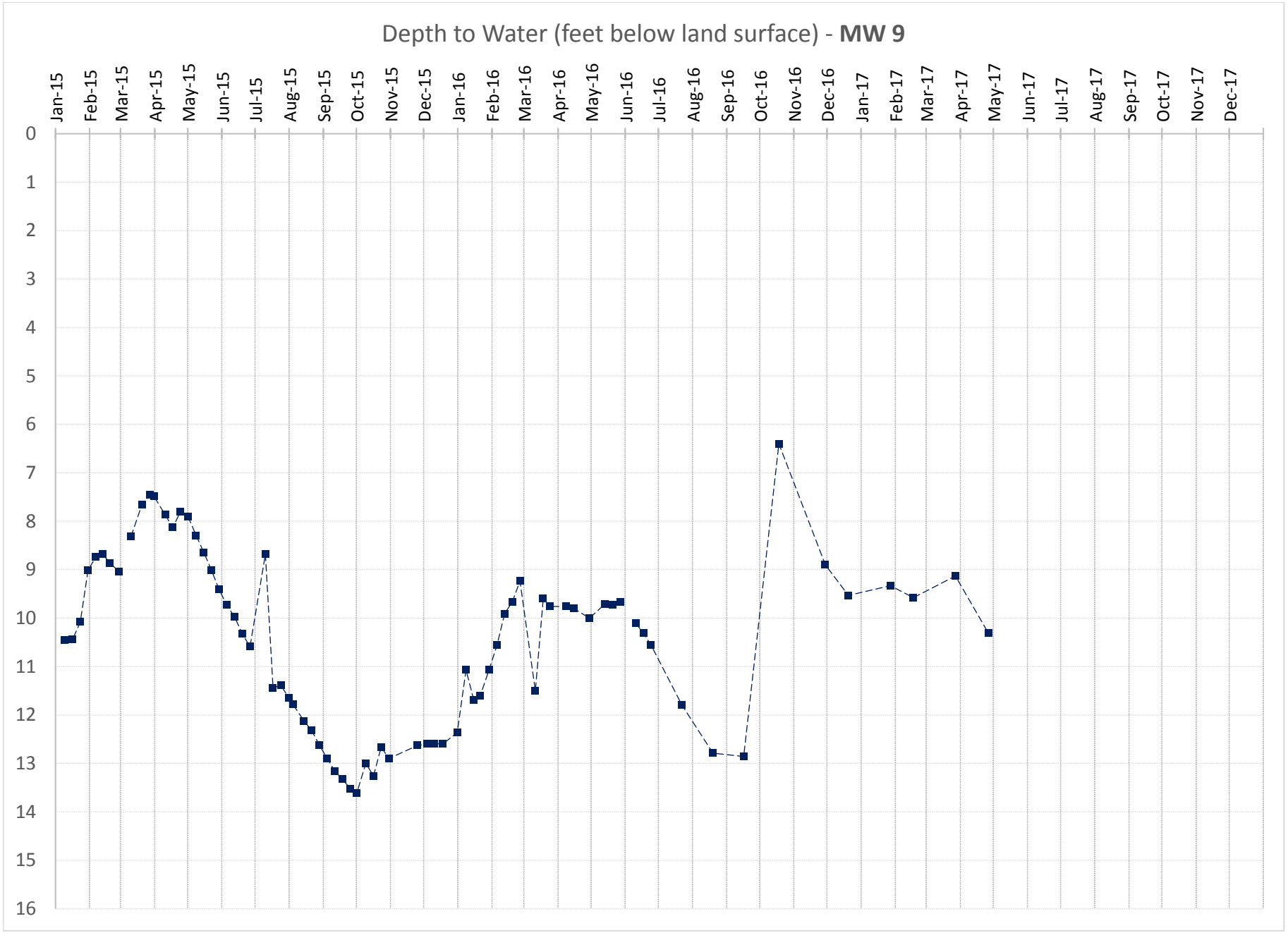
Depth to Water (feet below land surface) - MW 9
Jan-15
Feb-15
Mar-15
Apr-15
May-15
Jun-15
Jul-15
Aug-15
Sep-15
Oct-15
Nov-15
Dec-15
Jan-16
Feb-16
Mar-16
Apr-16
May-16
Jun-16
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Oct-16
Nov-16
Dec-16
Jan-17
Feb-17
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May-17
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Oct-17
Nov-17
Dec-17
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16

Sussex County, DE										
depth to water										
(ft below top pvc)										
		1/9/15	**1/16/15**	**1/23/15**	**1/30/15**	**2/6/15**	**2/12/15**	**2/19/15**	**2/27/15**	**3/6/15**
MW1		11.91	11.89	11.53	10.47	10.19	10.13	10.31	10.49	
MW2		11.76	11.81	11.42	10.63	10.49	10.44	10.65	10.78	10.61
MW3		14.21	14.27	13.99	13.12	12.86	12.81	12.94	13.06	
MW7		9.71	9.62	8.82	7.78	7.79	7.75	8.02	7.97	7.27
MW8		10.02	9.99	9.36	8.83	8.13	8.02	8.21	8.24	7.95
MW9		9.66	9.63	9.02	8.01	7.86	7.79	8.02	8.16	7.69
depth to water										
(ft below land)										
	pvc height	**1/9/15**	**1/16/15**	**1/23/15**	**1/30/15**	**2/6/15**	**2/12/15**	**2/19/15**	**2/27/15**	**3/6/15**
MW1	1.45	10.5	10.4	10.1	9.0	8.7	8.7	8.9	9.0	
MW2	1.64	10.1	10.2	9.8	9.0	8.9	8.8	9.0	9.1	9.0
MW3	1.41	12.8	12.9	12.6	11.7	11.5	11.4	11.5	11.7	
MW7	1.71	8.0	7.9	7.1	6.1	6.1	6.0	6.3	6.3	5.6
MW8	1.68	8.3	8.3	7.7	7.2	6.5	6.3	6.5	6.6	6.3
MW9	1.70	8.0	7.9	7.3	6.3	6.2	6.1	6.3	6.5	6.0
groundwater elevation										
(ft above sea level)										
	pvc elev	**1/9/15**	**1/16/15**	**1/23/15**	**1/30/15**	**2/6/15**	**2/12/15**	**2/19/15**	**2/27/15**	**3/6/15**
MW1	34.11	22.20	22.22	22.58	23.64	23.92	23.98	23.80	23.62	34.11
MW2	31.41	19.65	19.60	19.99	20.78	20.92	20.97	20.76	20.63	20.80
MW3	33.60	19.39	19.33	19.61	20.48	20.74	20.79	20.66	20.54	33.60
MW7	35.34	25.63	25.72	26.52	27.56	27.55	27.59	27.32	27.37	28.07
MW8	36.36	26.34	26.37	27.00	27.53	28.23	28.34	28.15	28.12	28.41
MW9	34.72	25.06	25.09	25.70	26.71	26.86	26.93	26.70	26.56	27.03

Sussex County, DE										
depth to water										
(ft below top pvc)										
		3/10/15	**3/20/15**	**3/27/15**	**3/31/15**	**4/10/15**	**4/17/15**	**4/24/15**	**5/1/15**	**5/8/15**
MW1		9.76	9.11	8.91	8.94	9.32	9.58	9.25	9.36	9.74
MW2		10.51	10.48	9.64	9.68	10.03	10.23	9.84	9.97	10.31
MW3		12.51	11.97	11.84	11.85	12.17	12.37	12.11	12.11	12.61
MW7		6.91	6.59	6.45	6.51	7.01	7.14	6.62	7.11	7.51
MW8		7.47	7.01	6.82	6.85	7.21	7.42	7.16	7.32	7.62
MW9		7.25	6.76	6.67	6.62	7.02	7.22	6.79	7.11	7.45
depth to water										
(ft below land)										
	pvc height	**3/10/15**	**3/20/15**	**3/27/15**	**3/31/15**	**4/10/15**	**4/17/15**	**4/24/15**	**5/1/15**	**5/8/15**
MW1	1.45	8.3	7.7	7.5	7.5	7.9	8.1	7.8	7.9	8.3
MW2	1.64	8.9	8.8	8.0	8.0	8.4	8.6	8.2	8.3	8.7
MW3	1.41	11.1	10.6	10.4	10.4	10.8	11.0	10.7	10.7	11.2
MW7	1.71	5.2	4.9	4.7	4.8	5.3	5.4	4.9	5.4	5.8
MW8	1.68	5.8	5.3	5.1	5.2	5.5	5.7	5.5	5.6	5.9
MW9	1.70	5.6	5.1	5.0	4.9	5.3	5.5	5.1	5.4	5.8
groundwater elevation										
(ft above sea level)										
	pvc elev	**3/10/15**	**3/20/15**	**3/27/15**	**3/31/15**	**4/10/15**	**4/17/15**	**4/24/15**	**5/1/15**	**5/8/15**
MW1	34.11	24.35	25.00	25.20	25.17	24.79	24.53	24.86	24.75	24.37
MW2	31.41	20.90	20.93	21.77	21.73	21.38	21.18	21.57	21.44	21.10
MW3	33.60	21.09	21.63	21.76	21.75	21.43	21.23	21.49	21.49	20.99
MW7	35.34	28.43	28.75	28.89	28.83	28.33	28.20	28.72	28.23	27.83
MW8	36.36	28.89	29.35	29.54	29.51	29.15	28.94	29.20	29.04	28.74
MW9	34.72	27.47	27.96	28.05	28.10	27.70	27.50	27.93	27.61	27.27

Sussex County, DE										
depth to water										
(ft below top pvc)										
		5/15/15	**5/22/15**	**5/29/15**	**6/5/15**	**6/12/15**	**6/19/15**	**6/26/15**	**7/10/15**	**7/17/15**
MW1		10.09	10.46	10.86	11.18	11.43	11.78	12.04	10.13	12.89
MW2		10.57	10.85	11.14	8.96	11.58	11.83	12.04	10.44	12.45
MW3		12.91	13.11	13.53	13.72	13.91	14.12	14.31	12.81	14.73
MW7		7.91	8.29	8.69	8.77	9.04	9.41	9.67	7.75	10.16
MW8		7.96	8.31	8.69	9.01	9.25	9.54	9.83	8.02	10.36
MW9		7.77	8.15	8.54	8.85	9.08	9.37	9.66	7.79	10.12
depth to water										
(ft below land)										
	pvc height	**5/15/15**	**5/22/15**	**5/29/15**	**6/5/15**	**6/12/15**	**6/19/15**	**6/26/15**	**7/10/15**	**7/17/15**
MW1	1.45	8.6	9.0	9.4	9.7	10.0	10.3	10.6	8.7	11.4
MW2	1.64	8.9	9.2	9.5	7.3	9.9	10.2	10.4	8.8	10.8
MW3	1.41	11.5	11.7	12.1	12.3	12.5	12.7	12.9	11.4	13.3
MW7	1.71	6.2	6.6	7.0	7.1	7.3	7.7	8.0	6.0	8.5
MW8	1.68	6.3	6.6	7.0	7.3	7.6	7.9	8.2	6.3	8.7
MW9	1.70	6.1	6.5	6.8	7.2	7.4	7.7	8.0	6.1	8.4
groundwater elevation										
(ft above sea level)										
	pvc elev	**5/15/15**	**5/22/15**	**5/29/15**	**6/5/15**	**6/12/15**	**6/19/15**	**6/26/15**	**7/10/15**	**7/17/15**
MW1	34.11	24.02	23.65	23.25	22.93	22.68	22.33	22.07	23.98	21.22
MW2	31.41	20.84	20.56	20.27	22.45	19.83	19.58	19.37	20.97	18.96
MW3	33.60	20.69	20.49	20.07	19.88	19.69	19.48	19.29	20.79	18.87
MW7	35.34	27.43	27.05	26.65	26.57	26.30	25.93	25.67	27.59	25.18
MW8	36.36	28.40	28.05	27.67	27.35	27.11	26.82	26.53	28.34	26.00
MW9	34.72	26.95	26.57	26.18	25.87	25.64	25.35	25.06	26.93	24.60

Sussex County, DE										
depth to water										
(ft below top pvc)										
		7/24/15	**7/31/15**	**8/4/15**	**8/14/15**	**8/21/15**	**8/28/15**	**9/4/15**	**9/11/15**	**9/18/15**
MW1		12.84	13.09	13.23	13.57	13.77	14.07	14.35	14.61	14.78
MW2		12.87	12.85	12.94	13.18	13.38	13.54	13.81	14.01	14.19
MW3		14.95	15.15	15.24	15.68	15.96	16.37	16.74	16.72	16.95
MW7		10.48	10.78	10.94	11.26	11.49	11.81	12.05	12.31	12.51
MW8		10.65	10.94	11.09	11.46	11.68	11.99	12.23	12.47	12.71
MW9		10.51	10.81	10.96	11.28	11.57	11.81	12.05	12.28	12.47
depth to water										
(ft below land)										
	pvc height	**7/24/15**	**7/31/15**	**8/4/15**	**8/14/15**	**8/21/15**	**8/28/15**	**9/4/15**	**9/11/15**	**9/18/15**
MW1	1.45	11.4	11.6	11.8	12.1	12.3	12.6	12.9	13.2	13.3
MW2	1.64	11.2	11.2	11.3	11.5	11.7	11.9	12.2	12.4	12.6
MW3	1.41	13.5	13.7	13.8	14.3	14.6	15.0	15.3	15.3	15.5
MW7	1.71	8.8	9.1	9.2	9.6	9.8	10.1	10.3	10.6	10.8
MW8	1.68	9.0	9.3	9.4	9.8	10.0	10.3	10.6	10.8	11.0
MW9	1.70	8.8	9.1	9.3	9.6	9.9	10.1	10.4	10.6	10.8
groundwater elevation										
(ft above sea level)										
	pvc elev	**7/24/15**	**7/31/15**	**8/4/15**	**8/14/15**	**8/21/15**	**8/28/15**	**9/4/15**	**9/11/15**	**9/18/15**
MW1	34.11	21.27	21.02	20.88	20.54	20.34	20.04	19.76	19.50	19.33
MW2	31.41	18.54	18.56	18.47	18.23	18.03	17.87	17.60	17.40	17.22
MW3	33.60	18.65	18.45	18.36	17.92	17.64	17.23	16.86	16.88	16.65
MW7	35.34	24.86	24.56	24.40	24.08	23.85	23.53	23.29	23.03	22.83
MW8	36.36	25.71	25.42	25.27	24.90	24.68	24.37	24.13	23.89	23.65
MW9	34.72	24.21	23.91	23.76	23.44	23.15	22.91	22.67	22.44	22.25

Sussex County, DE										
depth to water										
(ft below top pvc)										
		9/25/15	**10/1/15**	**10/9/15**	**10/16/15**	**10/23/15**	**10/30/15**	**11/25/15**	**12/4/15**	**12/10/15**
MW1		14.97	15.06	14.45	14.71	14.11	14.35	14.08	14.05	14.04
MW2		14.29	14.34	13.59	13.76	13.46	13.56	13.41	13.38	13.33
MW3		16.88	16.92	16.21	15.95	15.92	15.93	15.86	15.83	15.83
MW7		12.75	12.86	11.73	11.74	11.87	11.89	11.38	12.05	12.02
MW8		12.95	13.07	12.38	12.17	12.19	12.18	12.36	12.41	12.38
MW9		12.71	12.83	11.69	11.84	11.84	11.99	11.98	12.01	11.97
depth to water										
(ft below land)										
	pvc height	**9/25/15**	**10/1/15**	**10/9/15**	**10/16/15**	**10/23/15**	**10/30/15**	**11/25/15**	**12/4/15**	**12/10/15**
MW1	1.45	13.5	13.6	13.0	13.3	12.7	12.9	12.6	12.6	12.6
MW2	1.64	12.7	12.7	12.0	12.1	11.8	11.9	11.8	11.7	11.7
MW3	1.41	15.5	15.5	14.8	14.5	14.5	14.5	14.5	14.4	14.4
MW7	1.71	11.0	11.2	10.0	10.0	10.2	10.2	9.7	10.3	10.3
MW8	1.68	11.3	11.4	10.7	10.5	10.5	10.5	10.7	10.7	10.7
MW9	1.70	11.0	11.1	10.0	10.1	10.1	10.3	10.3	10.3	10.3
groundwater elevation										
(ft above sea level)										
	pvc elev	**9/25/15**	**10/1/15**	**10/9/15**	**10/16/15**	**10/23/15**	**10/30/15**	**11/25/15**	**12/4/15**	**12/10/15**
MW1	34.11	19.14	19.05	19.66	19.40	20.00	19.76	20.03	20.06	20.07
MW2	31.41	17.12	17.07	17.82	17.65	17.95	17.85	18.00	18.03	18.08
MW3	33.60	16.72	16.68	17.39	17.65	17.68	17.67	17.74	17.77	17.77
MW7	35.34	22.59	22.48	23.61	23.60	23.47	23.45	23.96	23.29	23.32
MW8	36.36	23.41	23.29	23.98	24.19	24.17	24.18	24.00	23.95	23.98
MW9	34.72	22.01	21.89	23.03	22.88	22.88	22.73	22.74	22.71	22.75

Sussex County, DE										
depth to water										
(ft below top pvc)										
		12/18/15	**12/31/15**	**1/8/16**	**1/15/16**	**1/21/16**	**1/29/16**	**2/5/16**	**2/12/16**	**2/19/16**
MW1		14.05	13.81	12.52	13.14	13.05	12.52	12.01	11.36	11.11
MW2		13.37	13.11	12.06	12.55	12.51	12.06	11.68	11.21	11.04
MW3		15.86	15.24	14.61	15.06	15.01	14.61	14.16	13.38	13.45
MW7		12.11	11.46	10.08	11.05	10.89	10.08	9.76	9.03	8.53
MW8		12.46	12.04	10.58	11.38	11.31	10.58	10.09	9.45	9.09
MW9		12.06	11.44	10.15	10.96	10.89	10.15	9.71	9.09	8.77
depth to water										
(ft below land)										
	pvc height	**12/18/15**	**12/31/15**	**1/8/16**	**1/15/16**	**1/21/16**	**1/29/16**	**2/5/16**	**2/12/16**	**2/19/16**
MW1	1.45	12.6	12.4	11.1	11.7	11.6	11.1	10.6	9.9	9.7
MW2	1.64	11.7	11.5	10.4	10.9	10.9	10.4	10.0	9.6	9.4
MW3	1.41	14.5	13.8	13.2	13.7	13.6	13.2	12.8	12.0	12.0
MW7	1.71	10.4	9.8	8.4	9.3	9.2	8.4	8.1	7.3	6.8
MW8	1.68	10.8	10.4	8.9	9.7	9.6	8.9	8.4	7.8	7.4
MW9	1.70	10.4	9.7	8.5	9.3	9.2	8.5	8.0	7.4	7.1
groundwater elevation										
(ft above sea level)										
	pvc elev	**12/18/15**	**12/31/15**	**1/8/16**	**1/15/16**	**1/21/16**	**1/29/16**	**2/5/16**	**2/12/16**	**2/19/16**
MW1	34.11	20.06	20.30	21.59	20.97	21.06	21.59	22.10	22.75	23.00
MW2	31.41	18.04	18.30	19.35	18.86	18.90	19.35	19.73	20.20	20.37
MW3	33.60	17.74	18.36	18.99	18.54	18.59	18.99	19.44	20.22	20.15
MW7	35.34	23.23	23.88	25.26	24.29	24.45	25.26	25.58	26.31	26.81
MW8	36.36	23.90	24.32	25.78	24.98	25.05	25.78	26.27	26.91	27.27
MW9	34.72	22.66	23.28	24.57	23.76	23.83	24.57	25.01	25.63	25.95

Sussex County, DE										
depth to water										
(ft below top pvc)										
		2/26/16	**3/11/16**	**3/18/16**	**3/24/16**	**4/8/16**	**4/15/16**	**4/29/16**	**5/13/16**	**5/20/16**
MW1		10.69	12.95	11.05	11.21	11.21	11.25	11.45	11.16	11.17
MW2		10.79	11.02	11.12	11.25	11.26	11.27	11.44	11.21	11.22
MW3		13.17	13.31	13.42	13.56	13.56	13.58	13.75	13.53	13.54
MW7		8.49	8.71	8.76	8.89	8.67	8.77	9.08	8.46	8.71
MW8		8.43	8.89	8.98	9.09	9.01	9.05	9.28	8.88	8.92
MW9		8.46	8.66	8.76	8.88	8.73	8.83	9.09	8.67	8.74
depth to water										
(ft below land)										
	pvc height	**2/26/16**	**3/11/16**	**3/18/16**	**3/24/16**	**4/8/16**	**4/15/16**	**4/29/16**	**5/13/16**	**5/20/16**
MW1	1.45	9.2	11.5	9.6	9.8	9.8	9.8	10.0	9.7	9.7
MW2	1.64	9.2	9.4	9.5	9.6	9.6	9.6	9.8	9.6	9.6
MW3	1.41	11.8	11.9	12.0	12.2	12.2	12.2	12.3	12.1	12.1
MW7	1.71	6.8	7.0	7.1	7.2	7.0	7.1	7.4	6.8	7.0
MW8	1.68	6.8	7.2	7.3	7.4	7.3	7.4	7.6	7.2	7.2
MW9	1.70	6.8	7.0	7.1	7.2	7.0	7.1	7.4	7.0	7.0
groundwater elevation										
(ft above sea level)										
	pvc elev	**2/26/16**	**3/11/16**	**3/18/16**	**3/24/16**	**4/8/16**	**4/15/16**	**4/29/16**	**5/13/16**	**5/20/16**
MW1	34.11	23.42	21.16	23.06	22.90	22.90	22.86	22.66	22.95	22.94
MW2	31.41	20.62	20.39	20.29	20.16	20.15	20.14	19.97	20.20	20.19
MW3	33.60	20.43	20.29	20.18	20.04	20.04	20.02	19.85	20.07	20.06
MW7	35.34	26.85	26.63	26.58	26.45	26.67	26.57	26.26	26.88	26.63
MW8	36.36	27.93	27.47	27.38	27.27	27.35	27.31	27.08	27.48	27.44
MW9	34.72	26.26	26.06	25.96	25.84	25.99	25.89	25.63	26.05	25.98

Sussex County, DE										
depth to water										
(ft below top pvc)										
		5/27/16	**6/3/16**	**6/10/16**	**6/17/16**	**6/24/16**	**7/22/16**	**8/19/16**	**9/16/16**	**10/18/16**
MW1		11.11		11.56	11.76	12.01	13.25	14.24	14.31	7.85
MW2		11.23	11.31	11.51	11.69	11.97	12.91	13.71	13.76	8.69
MW3		13.51		13.85	14.07	14.32	15.58	16.28	16.51	10.61
MW7		8.51	8.52	9.07	9.35		10.79	11.76	11.91	5.61
MW8		8.81	8.92	9.18	9.47		10.88	11.92	12.08	5.97
MW9		8.58	8.71	9.01	9.33		10.81	11.81	11.93	5.67
depth to water										
(ft below land)										
	pvc height	**5/27/16**	**6/3/16**	**6/10/16**	**6/17/16**	**6/24/16**	**7/22/16**	**8/19/16**	**9/16/16**	**10/18/16**
MW1	1.45	9.7		10.1	10.3	10.6	11.8	12.8	12.9	6.4
MW2	1.64	9.6	9.7	9.9	10.1	10.3	11.3	12.1	12.1	7.1
MW3	1.41	12.1		12.4	12.7	12.9	14.2	14.9	15.1	9.2
MW7	1.71	6.8	6.8	7.4	7.6		9.1	10.1	10.2	3.9
MW8	1.68	7.1	7.2	7.5	7.8		9.2	10.2	10.4	4.3
MW9	1.70	6.9	7.0	7.3	7.6		9.1	10.1	10.2	4.0
groundwater elevation										
(ft above sea level)										
	pvc elev	**5/27/16**	**6/3/16**	**6/10/16**	**6/17/16**	**6/24/16**	**7/22/16**	**8/19/16**	**9/16/16**	**10/18/16**
MW1	34.11	23.00	34.11	22.55	22.35	22.10	20.86	19.87	19.80	26.26
MW2	31.41	20.18	20.10	19.90	19.72	19.44	18.50	17.70	17.65	22.72
MW3	33.60	20.09	33.60	19.75	19.53	19.28	18.02	17.32	17.09	22.99
MW7	35.34	26.83	26.82	26.27	25.99	35.34	24.55	23.58	23.43	29.73
MW8	36.36	27.55	27.44	27.18	26.89	36.36	25.48	24.44	24.28	30.39
MW9	34.72	26.14	26.01	25.71	25.39	34.72	23.91	22.91	22.79	29.05

Sussex County, DE							
depth to water							
(ft below top pvc)							
		11/29/16	**12/20/16**	**1/27/17**	**2/17/17**	**3/27/17**	**4/26/17**
MW1		10.35	10.98	10.78	11.03	10.58	11.76
MW2		10.12	11.42	11.16	11.32	10.88	9.43
MW3		12.78	13.43	13.36	13.54	13.12	14.01
MW7		8.21	8.61	8.17	8.69	8.22	8.85
MW8		8.31	8.95	8.61	8.92	8.47	8.92
MW9		8.12	9.69	8.32	8.69	8.21	8.76
depth to water							
(ft below land)							
	pvc height	**11/29/16**	**12/20/16**	**1/27/17**	**2/17/17**	**3/27/17**	**4/26/17**
MW1	1.45	8.9	9.5	9.3	9.6	9.1	10.3
MW2	1.64	8.5	9.8	9.5	9.7	9.2	7.8
MW3	1.41	11.4	12.0	12.0	12.1	11.7	12.6
MW7	1.71	6.5	6.9	6.5	7.0	6.5	7.1
MW8	1.68	6.6	7.3	6.9	7.2	6.8	7.2
MW9	1.70	6.4	8.0	6.6	7.0	6.5	7.1
groundwater elevation							
(ft above sea level)							
	pvc elev	**11/29/16**	**12/20/16**	**1/27/17**	**2/17/17**	**3/27/17**	**4/26/17**
MW1	34.11	23.76	23.13	23.33	23.08	23.53	22.35
MW2	31.41	21.29	19.99	20.25	20.09	20.53	21.98
MW3	33.60	20.82	20.17	20.24	20.06	20.48	19.59
MW7	35.34	27.13	26.73	27.17	26.65	27.12	26.49
MW8	36.36	28.05	27.41	27.75	27.44	27.89	27.44
MW9	34.72	26.60	25.03	26.40	26.03	26.51	25.96

Appendix 5

Aquifer Test Data

Aquifer Test Calculations

$T = 264\ Q / ds$

Where Q is the flow rate in gallons per minute (gpm)

and ds is the drawdown (feet) per log cycle of time

Based on the straight-line part of the observation well semilog graph of drawdown vs. time, extending from approximately 7 to 700 elapsed minutes,

ds = 1.32 feet – 1.25 feet = 0.07 foot

T= (264)(101.8 gpm) / (0.07 ft) = 380,000 gallons per day per foot

Sand above confining layer = 100 feet thick determined by geophysical logging at well DW-1

Static water level in unconfined aquifer = approximately 8 feet deep

Saturated thickness = 100 feet – 8 feet = 92 feet

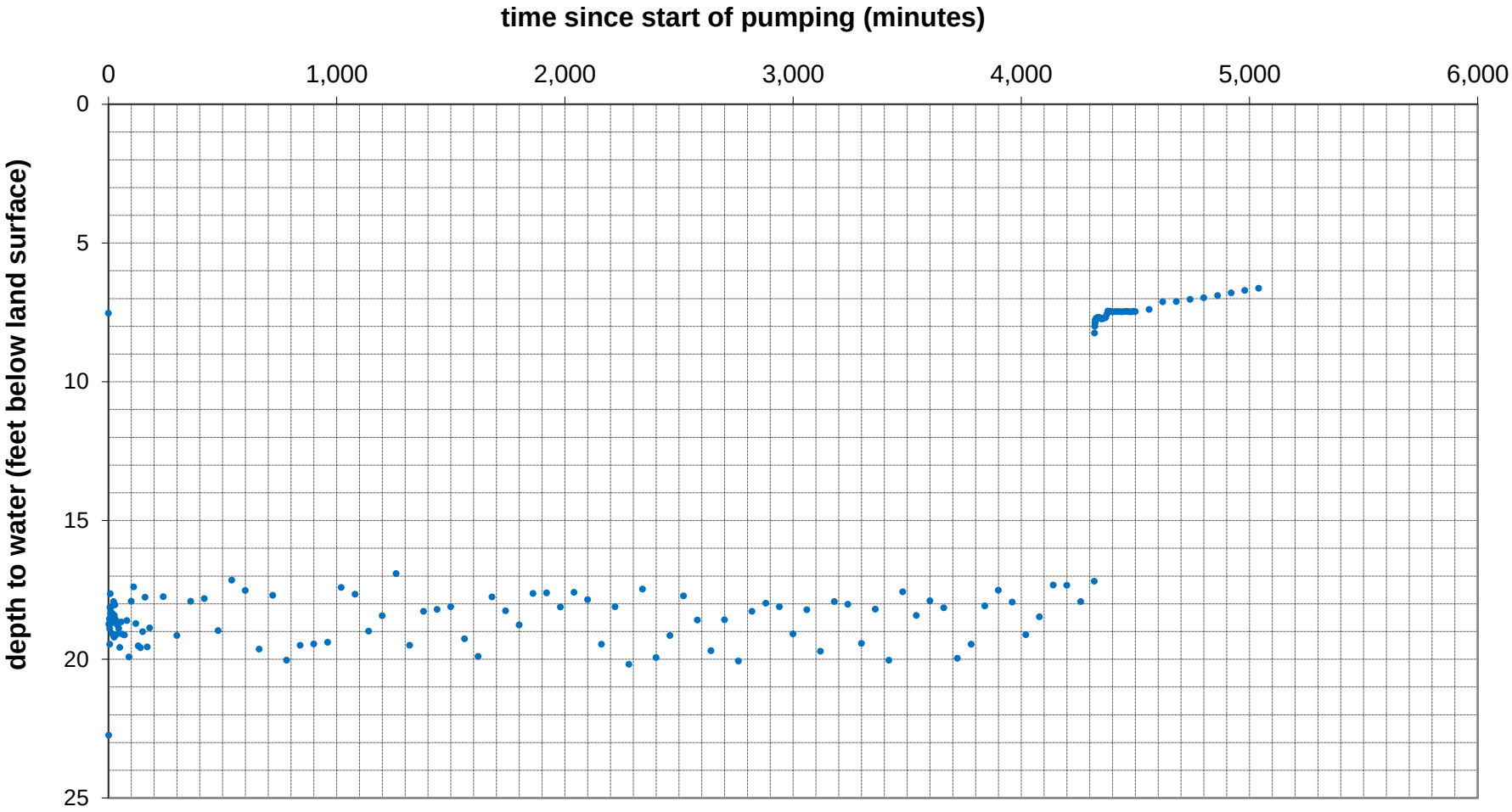
Hydraulic Conductivity (K) = transmissivity / (aquifer thickness)

K = [(380,000 gallons per day per foot) / (7.48 gallons/cubic foot)] / 92 feet

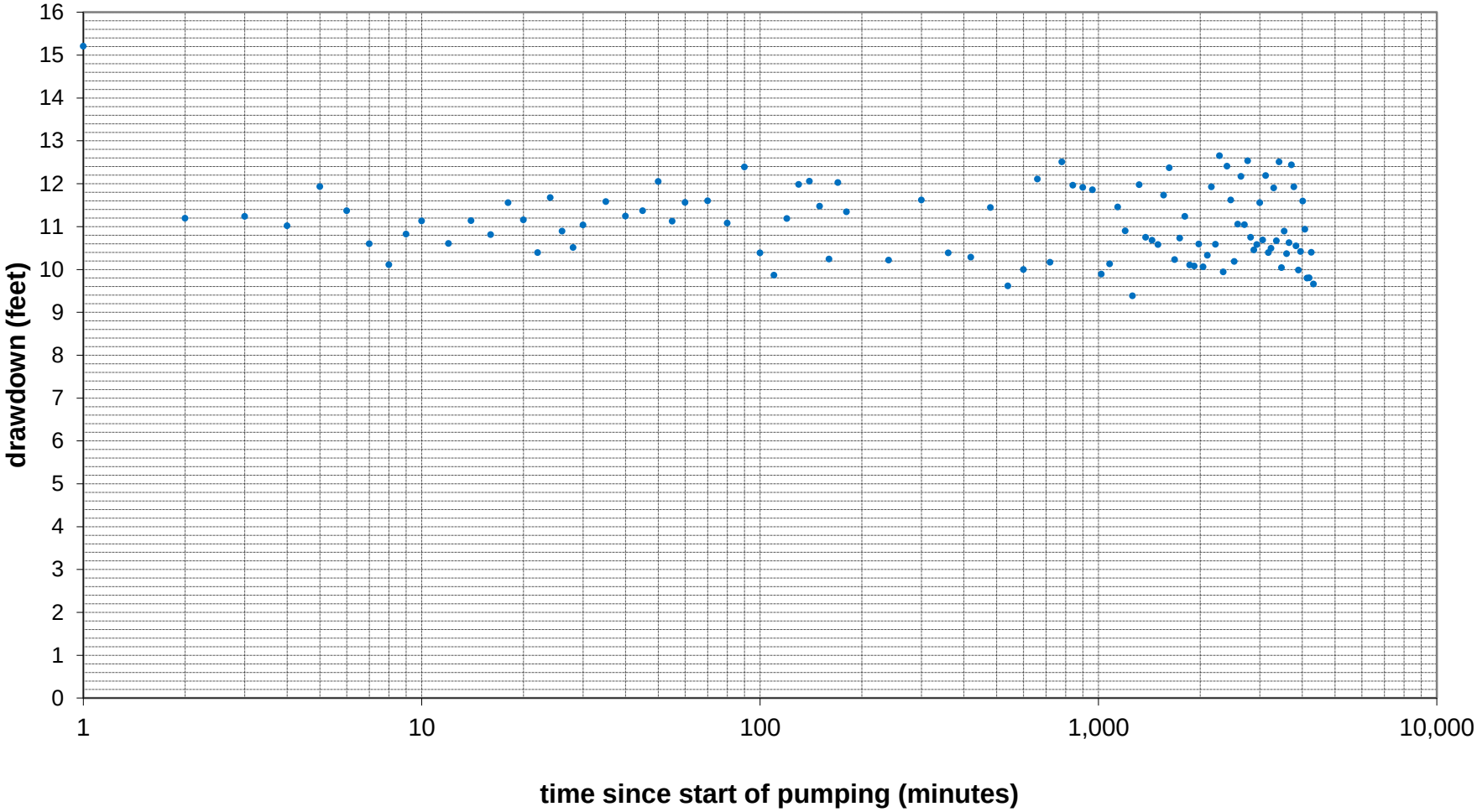
T = (51,000 square feet/day) / 92 feet

K = 550 feet/day

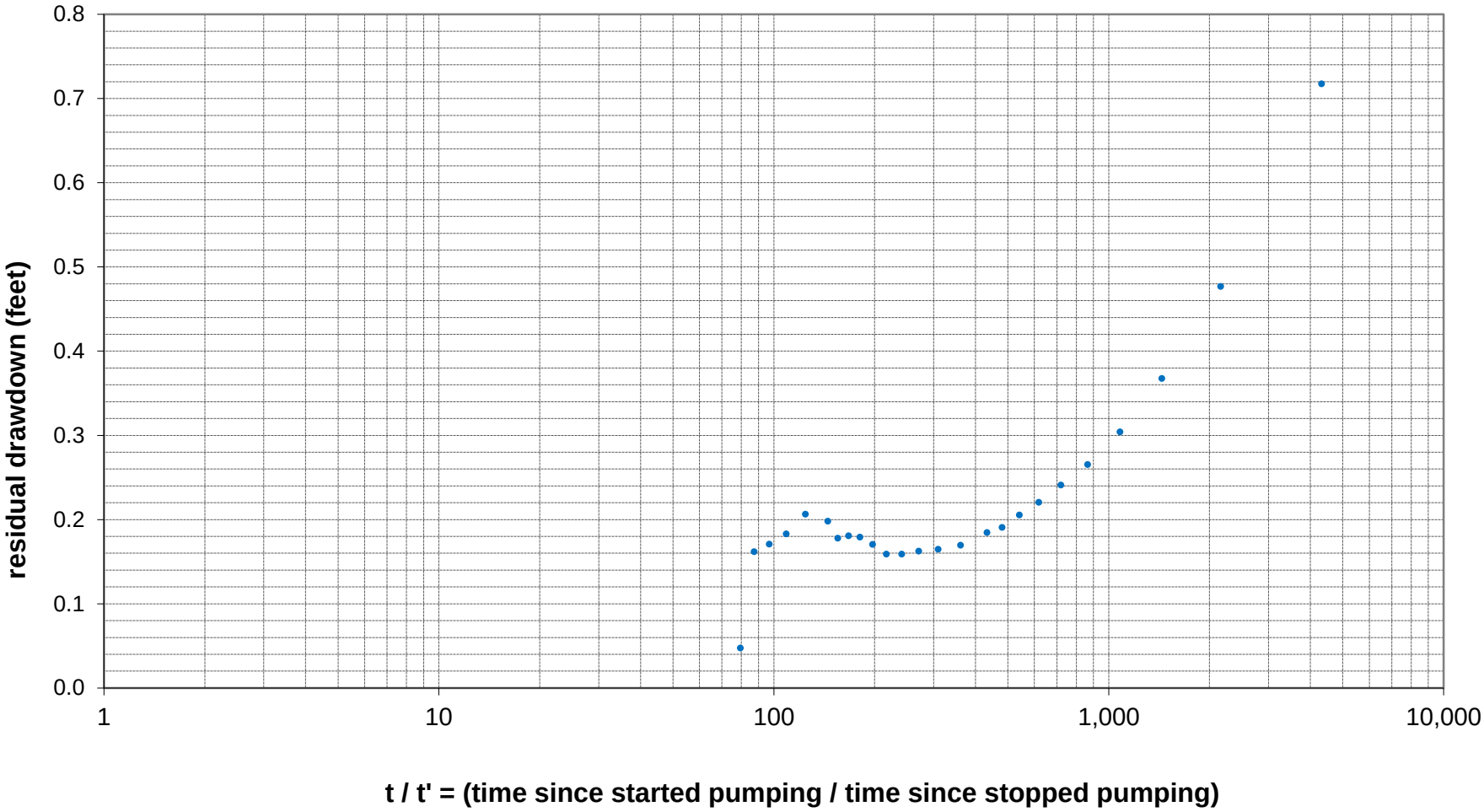
Depth to Water in Pumped Well DW-1
Aquifer Test at Sussex County, DE Inland Bays site
started on June 19, 2017



Drawdown in Pumped Well DW-1
Aquifer Test at Sussex County, DE, Inland Bays site
started on June 19, 2017



Residual Drawdown in Pumped Well DW-1
Aquifer Test at Sussex County, DE Inland Bays site
started on June 19, 2017



Aquifer Test Data from Pumped Well DW-1

Inland Bays Regional Wastewater Facilities in Sussex County, DE

start date: June 19, 2017 | **Data from: Somerset Well Drilling**

static water level = 7.53 feet below land surface | **Flow = 101.8 gpm**

t = time since pumping started (minutes)

d = depth to water below land surface (feet)

t' = time since pumping stopped (minutes)

s = drawdown (feet) = d - static **s' = residual drawdown (feet) = d - static**

t	d	s	t'	s'	t / t'	phase
0	7.53	0.00				pumping
1	22.74	15.21				pumping
2	18.72	11.19				pumping
3	18.77	11.24				pumping
4	18.55	11.02				pumping
5	19.46	11.93				pumping
6	18.90	11.37				pumping
7	18.13	10.60				pumping
8	17.64	10.11				pumping
9	18.35	10.82				pumping
10	18.66	11.13				pumping
12	18.13	10.60				pumping
14	18.67	11.14				pumping
16	18.34	10.81				pumping
18	19.09	11.56				pumping
20	18.69	11.16				pumping
22	17.92	10.39				pumping
24	19.20	11.67				pumping
26	18.42	10.89				pumping
28	18.04	10.51				pumping
30	18.57	11.04				pumping
35	19.11	11.58				pumping
40	18.77	11.24				pumping
45	18.90	11.37				pumping
50	19.58	12.05				pumping
55	18.66	11.13				pumping
60	19.10	11.57				pumping
70	19.13	11.60				pumping
80	18.61	11.08				pumping
90	19.92	12.39				pumping
100	17.92	10.39				pumping
110	17.39	9.86				pumping
120	18.71	11.18				pumping
130	19.52	11.99				pumping
140	19.59	12.06				pumping
150	19.01	11.48				pumping
160	17.77	10.24				pumping
170	19.56	12.03				pumping
180	18.87	11.34				pumping

Aquifer Test Data from Pumped Well DW-1

Inland Bays Regional Wastewater Facilities in Sussex County, DE

start date: June 19, 2017 | **Data from: Somerset Well Drilling**

static water level = 7.53 feet below land surface | **Flow = 101.8 gpm**

t = time since pumping started (minutes)

d = depth to water below land surface (feet)

t' = time since pumping stopped (minutes)

s = drawdown (feet) = d - static **s' = residual drawdown (feet) = d - static**

t	d	s	t'	s'	t / t'	phase
240	17.75	10.22				pumping
300	19.15	11.62				pumping
360	17.92	10.39				pumping
420	17.81	10.28				pumping
480	18.97	11.44				pumping
540	17.15	9.62				pumping
600	17.52	9.99				pumping
660	19.64	12.11				pumping
720	17.70	10.17				pumping
780	20.04	12.51				pumping
840	19.50	11.97				pumping
900	19.45	11.92				pumping
960	19.39	11.86				pumping
1,020	17.42	9.89				pumping
1,080	17.66	10.13				pumping
1,140	18.99	11.46				pumping
1,200	18.43	10.90				pumping
1,260	16.91	9.38				pumping
1,320	19.50	11.97				pumping
1,380	18.28	10.75				pumping
1,440	18.21	10.68				pumping
1,500	18.11	10.58				pumping
1,560	19.26	11.73				pumping
1,620	19.90	12.37				pumping
1,680	17.76	10.23				pumping
1,740	18.26	10.73				pumping
1,800	18.77	11.24				pumping
1,860	17.63	10.10				pumping
1,920	17.61	10.08				pumping
1,980	18.12	10.59				pumping
2,040	17.59	10.06				pumping
2,100	17.86	10.33				pumping
2,160	19.46	11.93				pumping
2,220	18.11	10.58				pumping
2,280	20.18	12.65				pumping
2,340	17.47	9.94				pumping
2,400	19.94	12.41				pumping
2,460	19.15	11.62				pumping
2,520	17.71	10.18				pumping

Aquifer Test Data from Pumped Well DW-1

Inland Bays Regional Wastewater Facilities in Sussex County, DE

start date: June 19, 2017 | **Data from: Somerset Well Drilling**

static water level = 7.53 feet below land surface | **Flow = 101.8 gpm**

t = time since pumping started (minutes)

d = depth to water below land surface (feet)

t' = time since pumping stopped (minutes)

s = drawdown (feet) = d - static **s' = residual drawdown (feet) = d - static**

t	d	s	t'	s'	t / t'	phase
2,580	18.59	11.06				pumping
2,640	19.70	12.17				pumping
2,700	18.58	11.05				pumping
2,760	20.07	12.54				pumping
2,820	18.28	10.75				pumping
2,880	17.98	10.45				pumping
2,940	18.11	10.58				pumping
3,000	19.09	11.56				pumping
3,060	18.21	10.68				pumping
3,120	19.72	12.19				pumping
3,180	17.92	10.39				pumping
3,240	18.02	10.49				pumping
3,300	19.43	11.90				pumping
3,360	18.20	10.67				pumping
3,420	20.04	12.51				pumping
3,480	17.57	10.04				pumping
3,540	18.42	10.89				pumping
3,600	17.90	10.37				pumping
3,660	18.15	10.62				pumping
3,720	19.97	12.44				pumping
3,780	19.46	11.93				pumping
3,840	18.08	10.55				pumping
3,900	17.52	9.99				pumping
3,960	17.95	10.42				pumping
4,020	19.12	11.59				pumping
4,080	18.47	10.94				pumping
4,140	17.33	9.80				pumping
4,200	17.33	9.80				pumping
4,260	17.93	10.40				pumping
4,320	17.19	9.66				pumping
4,321	8.25		1	0.72	4321.0	recovery
4,322	8.01		2	0.48	2161.0	recovery
4,323	7.90		3	0.37	1441.0	recovery
4,324	7.83		4	0.30	1081.0	recovery
4,325	7.80		5	0.27	865.0	recovery
4,326	7.77		6	0.24	721.0	recovery
4,327	7.75		7	0.22	618.1	recovery
4,328	7.74		8	0.21	541.0	recovery
4,329	7.72		9	0.19	481.0	recovery

Aquifer Test Data from Pumped Well DW-1

Inland Bays Regional Wastewater Facilities in Sussex County, DE

start date: June 19, 2017 | **Data from: Somerset Well Drilling**

static water level = 7.53 feet below land surface | **Flow = 101.8 gpm**

t = time since pumping started (minutes)

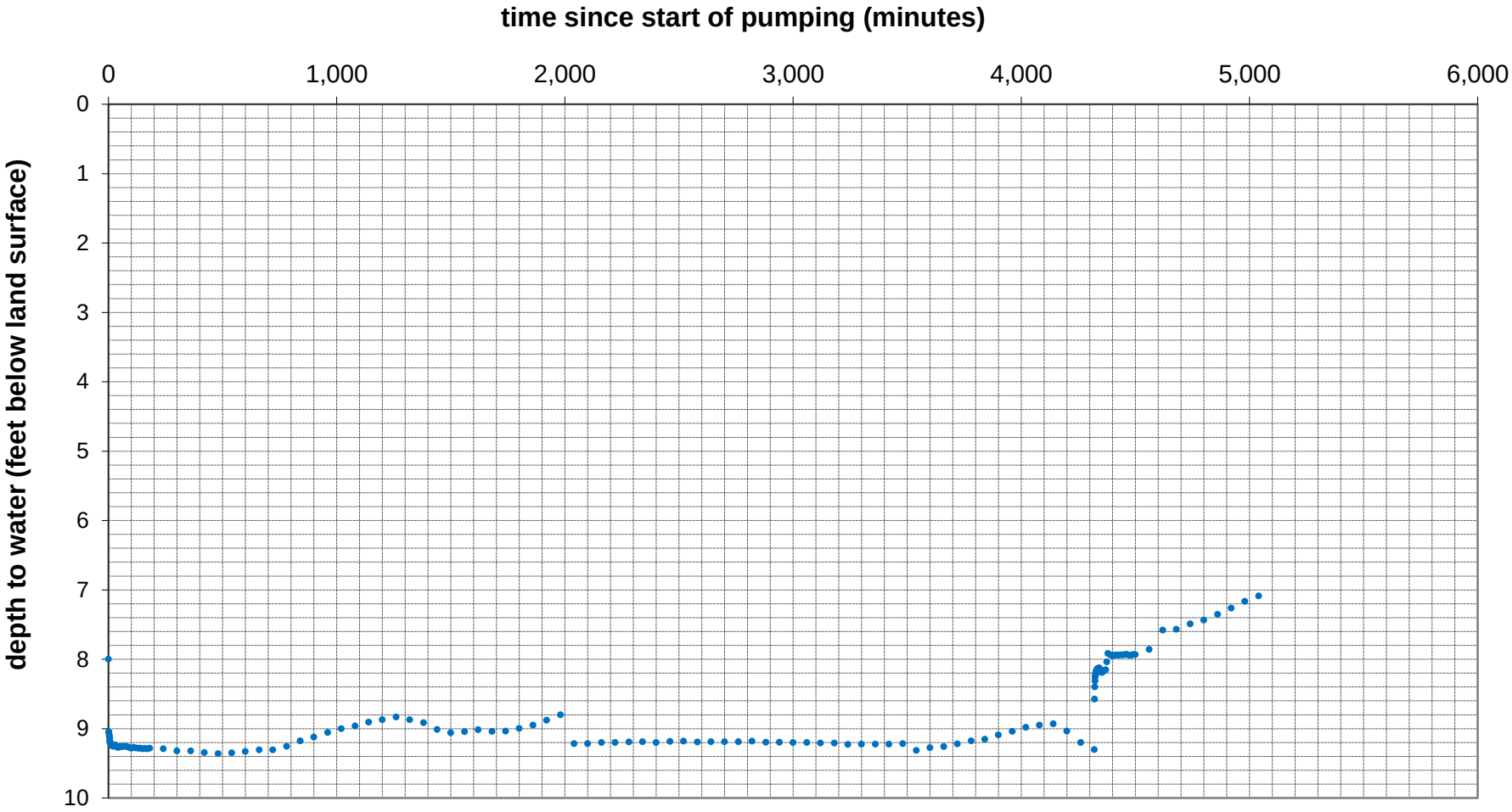
d = depth to water below land surface (feet)

t' = time since pumping stopped (minutes)

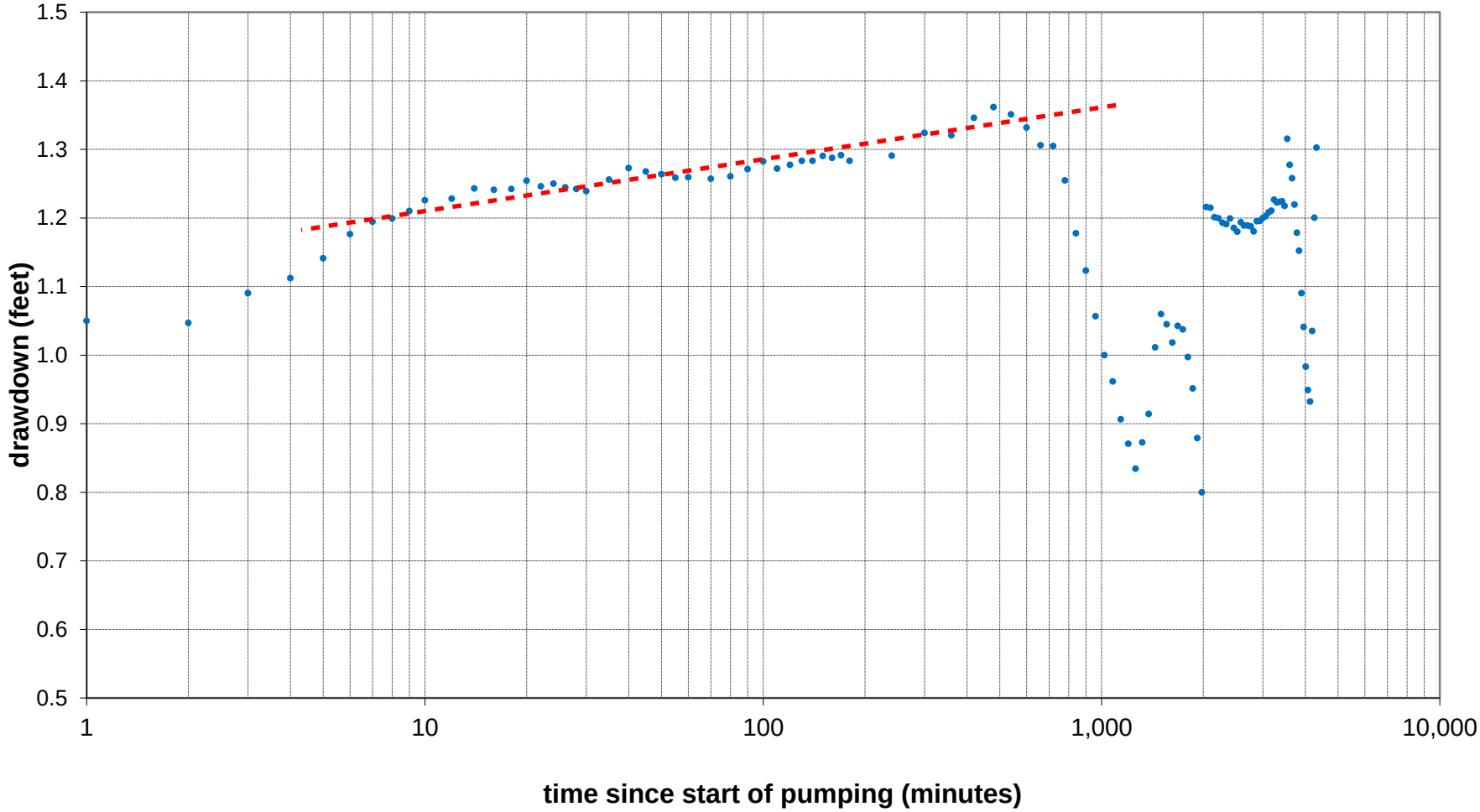
s = drawdown (feet) = d - static **s' = residual drawdown (feet) = d - static**

t	d	s	t'	s'	t / t'	phase
4,330	7.71		10	0.18	433.0	recovery
4,332	7.70		12	0.17	361.0	recovery
4,334	7.69		14	0.16	309.6	recovery
4,336	7.69		16	0.16	271.0	recovery
4,338	7.69		18	0.16	241.0	recovery
4,340	7.69		20	0.16	217.0	recovery
4,342	7.70		22	0.17	197.4	recovery
4,344	7.71		24	0.18	181.0	recovery
4,346	7.71		26	0.18	167.2	recovery
4,348	7.71		28	0.18	155.3	recovery
4,350	7.73		30	0.20	145.0	recovery
4,355	7.74		35	0.21	124.4	recovery
4,360	7.71		40	0.18	109.0	recovery
4,365	7.70		45	0.17	97.0	recovery
4,370	7.69		50	0.16	87.4	recovery
4,375	7.58		55	0.05	79.5	recovery
4,380	7.46		60	-0.07	73.0	recovery
4,390	7.47		70	-0.06	62.7	recovery
4,400	7.48		80	-0.05	55.0	recovery
4,410	7.48		90	-0.05	49.0	recovery
4,420	7.48		100	-0.05	44.2	recovery
4,430	7.47		110	-0.06	40.3	recovery
4,440	7.48		120	-0.05	37.0	recovery
4,450	7.47		130	-0.06	34.2	recovery
4,460	7.47		140	-0.06	31.9	recovery
4,470	7.48		150	-0.05	29.8	recovery
4,480	7.48		160	-0.05	28.0	recovery
4,490	7.47		170	-0.06	26.4	recovery
4,500	7.47		180	-0.06	25.0	recovery
4,560	7.40		240	-0.13	19.0	recovery
4,620	7.12		300	-0.41	15.4	recovery
4,680	7.11		360	-0.42	13.0	recovery
4,740	7.03		420	-0.50	11.3	recovery
4,800	6.97		480	-0.56	10.0	recovery
4,860	6.89		540	-0.64	9.0	recovery
4,920	6.80		600	-0.73	8.2	recovery
4,980	6.71		660	-0.82	7.5	recovery
5,040	6.63		720	-0.90	7.0	recovery

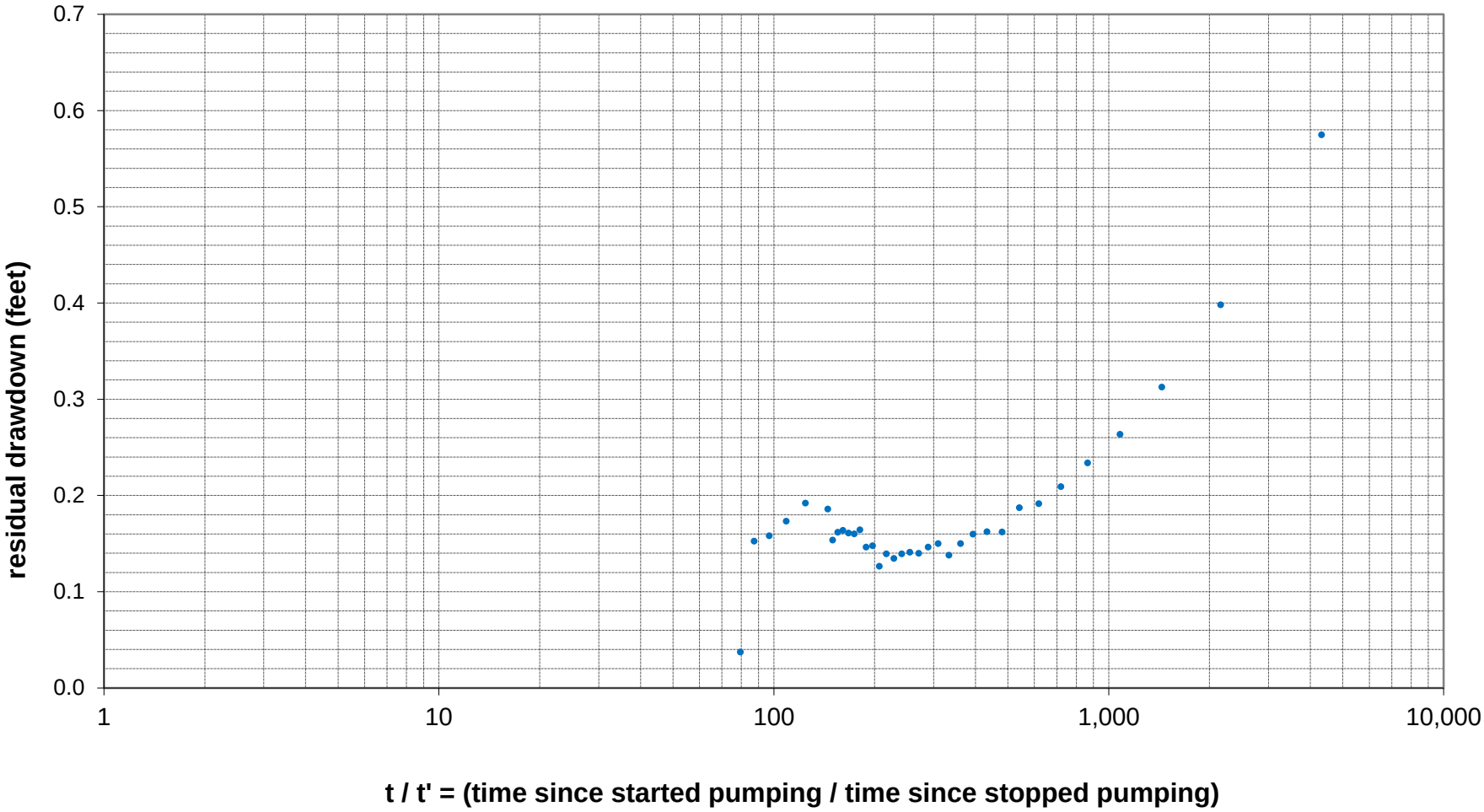
Depth to Water in Observation Well DW-2
Aquifer Test at Sussex County, DE Inland Bays site
started on June 19, 2017



Drawdown in Observation Well DW-2
Aquifer Test at Sussex County, DE, Inland Bays site
started on June 19, 2017



Residual Drawdown in Observation Well DW-2
Aquifer Test at Sussex County, DE Inland Bays site
started on June 19, 2017



Aquifer Test Data from Observation Well DW-2

Inland Bays Regional Wastewater Facilities in Sussex County, DE

start date: June 19, 2017 **Data from: Somerset Well Drilling**

static water level = 8.00 feet below land surface

t = time since pumping started (minutes)

d = depth to water below land surface (feet)

t' = time since pumping stopped (minutes)

s = drawdown (feet) = d - static **s' = residual drawdown (feet) = d - static**

t	d	s	t'	s'	t / t'	phase
0	8.00	0.00				pumping
1	9.05	1.05				pumping
2	9.05	1.05				pumping
3	9.09	1.09				pumping
4	9.11	1.11				pumping
5	9.14	1.14				pumping
6	9.18	1.18				pumping
7	9.19	1.19				pumping
8	9.20	1.20				pumping
9	9.21	1.21				pumping
10	9.23	1.23				pumping
12	9.23	1.23				pumping
14	9.24	1.24				pumping
16	9.24	1.24				pumping
18	9.24	1.24				pumping
20	9.25	1.25				pumping
22	9.25	1.25				pumping
24	9.25	1.25				pumping
26	9.24	1.24				pumping
28	9.24	1.24				pumping
30	9.24	1.24				pumping
35	9.26	1.26				pumping
40	9.27	1.27				pumping
45	9.27	1.27				pumping
50	9.26	1.26				pumping
55	9.26	1.26				pumping
60	9.26	1.26				pumping
70	9.26	1.26				pumping
80	9.26	1.26				pumping
90	9.27	1.27				pumping
100	9.28	1.28				pumping
110	9.27	1.27				pumping
120	9.28	1.28				pumping
130	9.28	1.28				pumping
140	9.28	1.28				pumping
150	9.29	1.29				pumping
160	9.29	1.29				pumping
170	9.29	1.29				pumping
180	9.28	1.28				pumping

Aquifer Test Data from Observation Well DW-2

Inland Bays Regional Wastewater Facilities in Sussex County, DE

start date: June 19, 2017 **Data from: Somerset Well Drilling**

static water level = 8.00 feet below land surface

t = time since pumping started (minutes)

d = depth to water below land surface (feet)

t' = time since pumping stopped (minutes)

s = drawdown (feet) = d - static **s' = residual drawdown (feet) = d - static**

t	d	s	t'	s'	t / t'	phase
240	9.29	1.29				pumping
300	9.32	1.32				pumping
360	9.32	1.32				pumping
420	9.35	1.35				pumping
480	9.36	1.36				pumping
540	9.35	1.35				pumping
600	9.33	1.33				pumping
660	9.31	1.31				pumping
720	9.30	1.30				pumping
780	9.25	1.25				pumping
840	9.18	1.18				pumping
900	9.12	1.12				pumping
960	9.06	1.06				pumping
1,020	9.00	1.00				pumping
1,080	8.96	0.96				pumping
1,140	8.91	0.91				pumping
1,200	8.87	0.87				pumping
1,260	8.83	0.83				pumping
1,320	8.87	0.87				pumping
1,380	8.91	0.91				pumping
1,440	9.01	1.01				pumping
1,500	9.06	1.06				pumping
1,560	9.04	1.04				pumping
1,620	9.02	1.02				pumping
1,680	9.04	1.04				pumping
1,740	9.04	1.04				pumping
1,800	9.00	1.00				pumping
1,860	8.95	0.95				pumping
1,920	8.88	0.88				pumping
1,980	8.80	0.80				pumping
2,040	9.22	1.22				pumping
2,100	9.21	1.21				pumping
2,160	9.20	1.20				pumping
2,220	9.20	1.20				pumping
2,280	9.19	1.19				pumping
2,340	9.19	1.19				pumping
2,400	9.20	1.20				pumping
2,460	9.19	1.19				pumping
2,520	9.18	1.18				pumping

Aquifer Test Data from Observation Well DW-2

Inland Bays Regional Wastewater Facilities in Sussex County, DE

start date: June 19, 2017 **Data from: Somerset Well Drilling**

static water level = 8.00 feet below land surface

t = time since pumping started (minutes)

d = depth to water below land surface (feet)

t' = time since pumping stopped (minutes)

s = drawdown (feet) = d - static **s' = residual drawdown (feet) = d - static**

t	d	s	t'	s'	t / t'	phase
2,580	9.19	1.19				pumping
2,640	9.19	1.19				pumping
2,700	9.19	1.19				pumping
2,760	9.19	1.19				pumping
2,820	9.18	1.18				pumping
2,880	9.20	1.20				pumping
2,940	9.20	1.20				pumping
3,000	9.20	1.20				pumping
3,060	9.20	1.20				pumping
3,120	9.21	1.21				pumping
3,180	9.21	1.21				pumping
3,240	9.23	1.23				pumping
3,300	9.22	1.22				pumping
3,360	9.22	1.22				pumping
3,420	9.22	1.22				pumping
3,480	9.22	1.22				pumping
3,540	9.32	1.32				pumping
3,600	9.28	1.28				pumping
3,660	9.26	1.26				pumping
3,720	9.22	1.22				pumping
3,780	9.18	1.18				pumping
3,840	9.15	1.15				pumping
3,900	9.09	1.09				pumping
3,960	9.04	1.04				pumping
4,020	8.98	0.98				pumping
4,080	8.95	0.95				pumping
4,140	8.93	0.93				pumping
4,200	9.04	1.04				pumping
4,260	9.20	1.20				pumping
4,320	9.30	1.30				pumping
4,321	8.57		1	0.57	4321.0	recovery
4,322	8.40		2	0.40	2161.0	recovery
4,323	8.31		3	0.31	1441.0	recovery
4,324	8.26		4	0.26	1081.0	recovery
4,325	8.23		5	0.23	865.0	recovery
4,326	8.21		6	0.21	721.0	recovery
4,327	8.19		7	0.19	618.1	recovery
4,328	8.19		8	0.19	541.0	recovery
4,329	8.16		9	0.16	481.0	recovery

Aquifer Test Data from Observation Well DW-2

Inland Bays Regional Wastewater Facilities in Sussex County, DE

start date: June 19, 2017 — **Data from: Somerset Well Drilling**

static water level = 8.00 feet below land surface

t = time since pumping started (minutes)

d = depth to water below land surface (feet)

t' = time since pumping stopped (minutes)

s = drawdown (feet) = d - static **s' = residual drawdown (feet) = d - static**

t	d	s	t'	s'	t / t'	phase
4,330	8.16		10	0.16	433.0	recovery
4,331	8.16		11	0.16	393.7	recovery
4,332	8.15		12	0.15	361.0	recovery
4,333	8.14		13	0.14	333.3	recovery
4,334	8.15		14	0.15	309.6	recovery
4,335	8.15		15	0.15	289.0	recovery
4,336	8.14		16	0.14	271.0	recovery
4,337	8.14		17	0.14	255.1	recovery
4,338	8.14		18	0.14	241.0	recovery
4,339	8.13		19	0.13	228.4	recovery
4,340	8.14		20	0.14	217.0	recovery
4,341	8.13		21	0.13	206.7	recovery
4,342	8.15		22	0.15	197.4	recovery
4,343	8.15		23	0.15	188.8	recovery
4,344	8.16		24	0.16	181.0	recovery
4,345	8.16		25	0.16	173.8	recovery
4,346	8.16		26	0.16	167.2	recovery
4,347	8.16		27	0.16	161.0	recovery
4,348	8.16		28	0.16	155.3	recovery
4,349	8.15		29	0.15	150.0	recovery
4,350	8.19		30	0.19	145.0	recovery
4,355	8.19		35	0.19	124.4	recovery
4,360	8.17		40	0.17	109.0	recovery
4,365	8.16		45	0.16	97.0	recovery
4,370	8.15		50	0.15	87.4	recovery
4,375	8.04		55	0.04	79.5	recovery
4,380	7.92		60	-0.08	73.0	recovery
4,390	7.93		70	-0.07	62.7	recovery
4,400	7.95		80	-0.05	55.0	recovery
4,410	7.94		90	-0.06	49.0	recovery
4,420	7.94		100	-0.06	44.2	recovery
4,430	7.94		110	-0.06	40.3	recovery
4,440	7.94		120	-0.06	37.0	recovery
4,450	7.94		130	-0.06	34.2	recovery
4,460	7.93		140	-0.07	31.9	recovery
4,470	7.94		150	-0.06	29.8	recovery
4,480	7.94		160	-0.06	28.0	recovery
4,490	7.93		170	-0.07	26.4	recovery
4,500	7.93		180	-0.07	25.0	recovery

Aquifer Test Data from Observation Well DW-2

Inland Bays Regional Wastewater Facilities in Sussex County, DE

start date: June 19, 2017 **Data from: Somerset Well Drilling**

static water level = 8.00 feet below land surface

t = time since pumping started (minutes)

d = depth to water below land surface (feet)

t' = time since pumping stopped (minutes)

s = drawdown (feet) = d - static **s' = residual drawdown (feet) = d - static**

t	d	s	t'	s'	t / t'	phase
4,560	7.86		240	-0.14	19.0	recovery
4,620	7.58		300	-0.42	15.4	recovery
4,680	7.57		360	-0.43	13.0	recovery
4,740	7.49		420	-0.51	11.3	recovery
4,800	7.44		480	-0.56	10.0	recovery
4,860	7.35		540	-0.65	9.0	recovery
4,920	7.26		600	-0.74	8.2	recovery
4,980	7.17		660	-0.83	7.5	recovery
5,040	7.09		720	-0.91	7.0	recovery

Geologic Log of Pilot Hole at well DW-1

Location: Inland Bays Regional Wastewater Facilities in Sussex County, Delaware

Drilled by: Somerset Well Drilling Co., Inc.

Descriptions by: S. Mogilnicki / WRA date: April 6, 2017

Major component in CAPITALS; and = 35-50%; some = 20-35%; little = 10-20%; trace = 1-10%

From (feet)	To (feet)	Description
0	10	SAND, brown (trace white and black), fine to medium, quartz
10	20	SAND, brown (trace yellow, white), medium to coarse, quartz
20	30	SAND, white and brown, medium, quartz
30	40	SAND, orange-brown, medium to coarse, quartz;
		trace gravel, yellow and red, subangular, quartz
40	50	SAND, brown, medium to coarse, quartz
		trace gravel, yellow, brown, red, subangular, quartz
50	60	SAND, brown to orange-brown, fine to medium, quartz
		trace gravel, yellow, brown, gray, subangular, quartz
60	70	SAND, brown to orange-brown, fine to medium, quartz
		trace gravel, yellow, brown, gray, subangular, quartz
70	80	SAND, brown, fine to medium, quartz
		trace lumps of gray clay;
		trace gravel, yellow, brown, gray, subangular to subrounded, quartz
80	90	SAND, brown, fine to medium, quartz
		trace lumps of gray clay;
		trace gravel, yellow, brown, gray, subangular to subrounded, quartz
		[includes clay reported by driller less than 1 ft. thick, at about 82 ft.]
90	100	SAND, brown, medium to coarse, quartz
		trace gravel, clear, red, yellow, gray, subangular to subrounded, quartz

Note: Drilled to final depth of 109 feet, at which a hard layer was encountered.

HYNES

JOHN D. HYNES & ASSOCIATES, INC.

Geotechnical and Environmental Consultants
Monitoring Well Installation
Construction Inspection and Materials Testing

July 13, 2017

Mr. J. Blake Burroughs
Whitman, Requardt & Associates, LLP
801 South Caroline Street
Baltimore, Maryland 21231

Re: Aquifer Testing Report Transmittal
Inland Bays Regional Wastewater
Facilities
Sussex County, Delaware
Project No.: JDH-10/16/279

Dear Mr. Burroughs:

John D. Hynes & Associates is pleased to present the report summarizing data that was collected during completion of the 72 hour aquifer test and 12 hour recovery test for the referenced project. Collection of the aquifer test data was completed by Somerset Well Drilling Co., Inc. (Somerset). The work was performed in general accordance with the Specifications for Borings and Wells document, dated May 11, 2016, that was prepared by WRA. In addition to the attached document, a digital copy of the raw aquifer test data will be forwarded to you via email.

The attached report that was prepared by Somerset includes well driller boring logs and well logs for observation well DW-1 and test well DW-2, an E-log of well DW-1, results of the sieve analysis used for test well design, and a summary of the data that was collected during the 72 hour aquifer test and 12 hour recovery test. Well DW-2 (6 inch diameter) was used as the pumping well and well DW-1 (2 inch diameter) was used as the observation well. Both wells were completed to depths of 80 feet. The wells are separated by a distance of 30 feet. Aquifer pumping, completed for a duration of 72 hours and at a rate of 101.8 gpm, was initiated on June 19, 2017. The 12 hour recovery test was initiated on June 22, 2017.

Hynes & Associates appreciates the opportunity to be of service to you. If you have any questions regarding this report or if we may be of further assistance, please contact our office.

Respectfully,
JOHN D. HYNES & ASSOCIATES, INC.

Richard D. Rhoads
Project Manager

John D. Hynes
President

RDR: JDH/jsl

c.c.: Steve Mogilnicki; Whitman, Requardt & Associates, LLP; Via Email: smogilnicki@wrallp.com

32185 Beaver Run Drive • Salisbury, Maryland 21804 • 410-546-6462 • Fax 410-548-5346
Email: jdhynes@aol.com

SOMERSET WELL DRILLING CO., INC.
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30170 RITZEL ROAD• P.O. BOX 67
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Inland Bays Regional Waste Water

Sussex County Delaware

Borings and Wells

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Inland Bays Regional Waste Water

Sussex County Delaware

E-Log

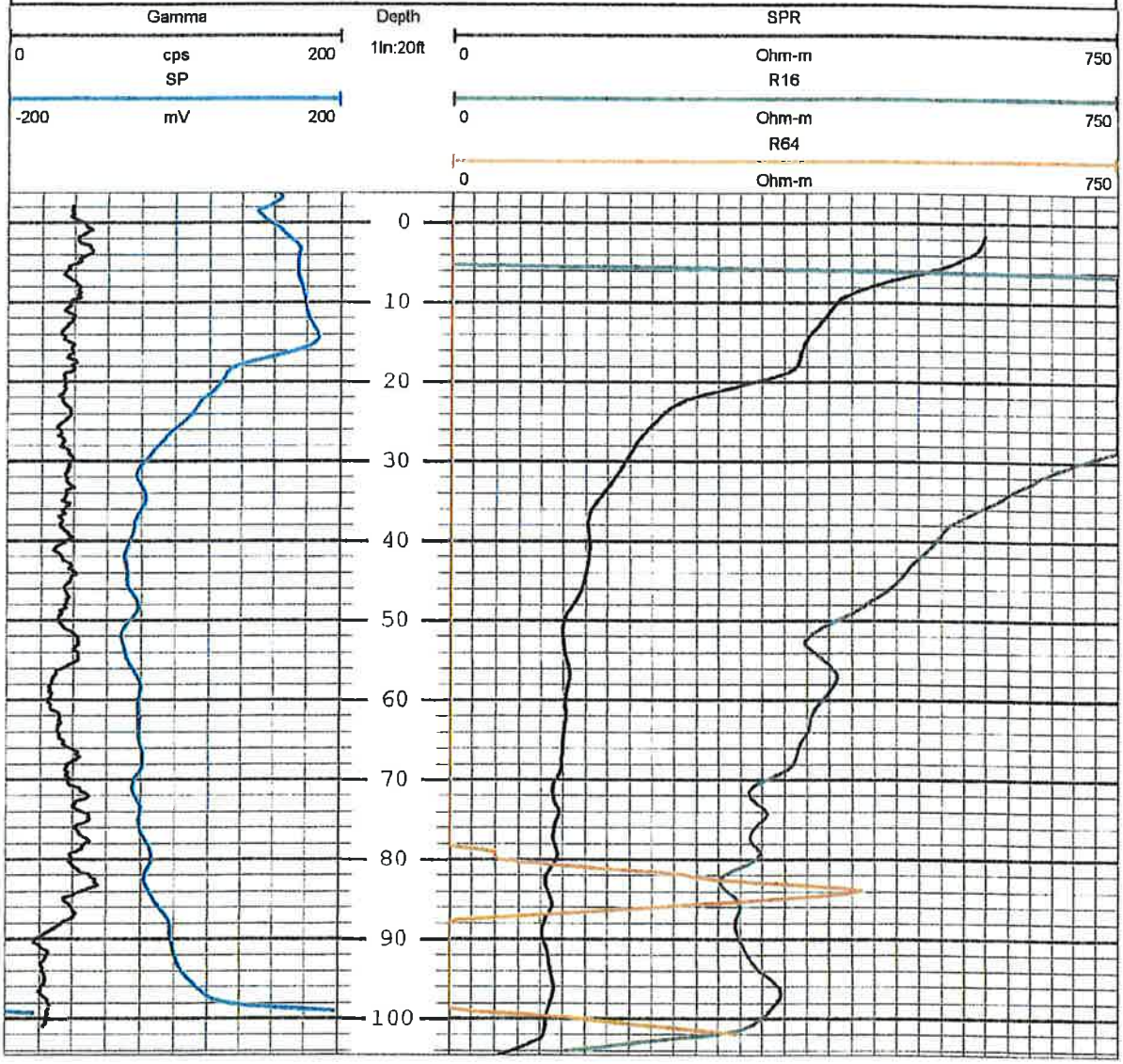
Earth Data Incorporated
131 Comet Drive, Centreville, MD 21617
Phone: (410) 758-8160 / Facsimile (410) 758-8168
www.earthdatainc.com

WELL I.D. DW-1

Logging Date: 4/6/2017
Logging Speed: 17 ft/min x Up Down
BOC: TD:

Project:	Inland Bays	Bit Size:	4 3/4	EDI Job No.:	4882
Client:	Sumerset Welldrilling	Fluid Type:	Mud Based Water	Technician:	James Janis
Location:	Townsend RD Millsboro DE	LAT: 38.63277° N LONG: -75.25722° W	Casing Material:	No Casing	Witness: Bobby

Notes:



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Drillers Log Test Bores

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Pump	Island Bay Project	Before	
Serial #	DW-1	After	
Drop		GPM	
Tank		Grout	
Date	4/6/2017	Iron	
Permit No.		Hardness	
Name:	Inland Bays	Clorides	
Well Location		PP	

Formation Description	From	To	Water
Surface soil some Brown Clay	0	5	
Tan Sand Medium	5	10	
Tan Sand Course , Some Light Gravel & Small Traces of Yellow &	10	20	
White Clay			
Tan Sand Course with Some Light Gravel	20	25	
Gold Sand Course Some light Gravel, Yellow & white trace Clay	25	30	
Course Gold & Tan Sand and Some Heavy Gravel	30	40	
Course Gold Sand and Some Medium Gravel	40	50	
Course Gold & Tan Sand & Some Medium Gravel, Some small traces	50	60	
of Tan Clay			
Course Gold Sand with Medium Gravel	60	70	
Medium to Course gold & Tan Sand with Small Gravel & Traces of	70	80	
Tan Clay			
Gray and Tan Clay	80	82	
Medium Gold & Tan Sand and some Light Gravel	82	90	
Course Tan and Gold Sand with Some reddish brown gravel & Sand	90	100	
Reddish Brown Sand & Course Gravel	100	109	

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Pump	Inland Bay Project	Before	7.53'
Serial #	DW-2	After	17.1883'
Drop		GPM	101
Tank		Grout	47'
Date	6/6/2017	Iron	
Permit No.	256937 (6" Well)	Hardness	
Name:	Sussex County-Inland Bays	Clorides	
Well Location	Mount Joy Road	PP	
	Millisboro, De 19966		

Formation Description	From	To	Water
Surface Soil	0	5	
Tan Sand with some Clay	5	10	
Clay	10	20	
Tan Sand Gravel	20	30	
Course Gold Sand / Tan Gravel	30	40	
Coarse Gold Sand with some medium Gravel	40	50	
Course Gold and Tan Sand and Gravel	40	50	
Course Gold Sand and Gravel some traces of Tan Clay	50	60	
Course Gold Sand with some Medium Gravel	60	70	
Medium to Course Sand and Gravel	70	81	
Gray / Tan Clay	81	82	
Set Well 6" X 80' PVC Flush joint PVC with 30' of #.040 Slot PVC.			
Flush Joint Screen , Well Gravel packed with #2 Well Gravel.			
Gravel Level terminated at 47'.			
Well Grouted with Bentonite Clay from 47' to surface.			

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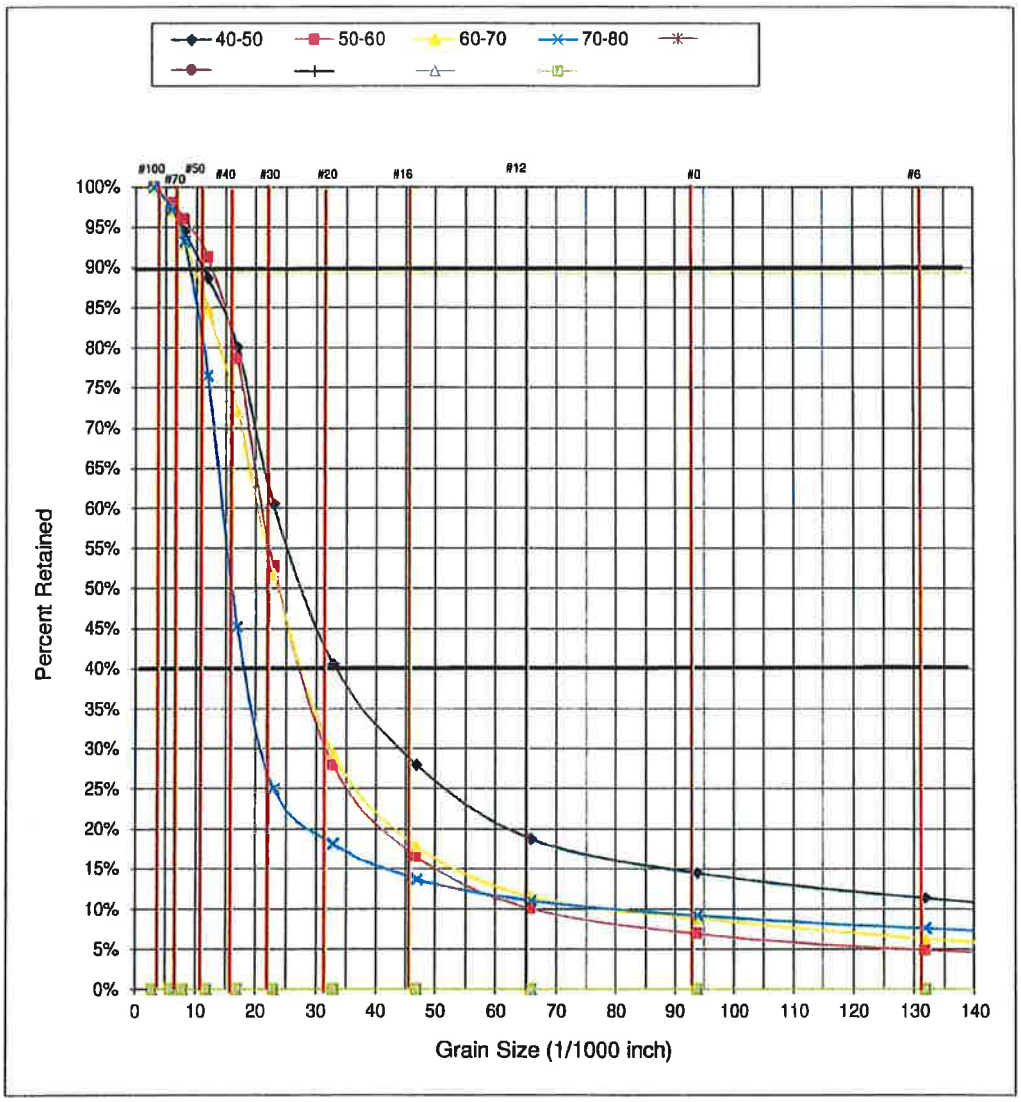
Inland Bays Regional Waste Water

Sussex County Delaware

Sand Sieve Analysis

Johnson Screens
651-636-3900

SAND ANALYSIS



Job Name Inland Bay Regional Wastewater F
Location Sussex Court, DE
Driller Somerset Well Drilling Co. Inc.

Sample ID 041717-1
Analyzed by: Al Smith, 651-638-3160
Date: 4/17/2017

Casing ϕ 6"
Screen ϕ 6"

Yield 100 GPM
SWL (ft) 15'

Recommended Slot Size 40 Slot From 40' - 80'
Recommended Gravel Pack #2 Morie

Based exclusively on the samples provided by the contractor, a sieve analysis graph and suggested screen slot size is provided as requested. Since numerous construction considerations and site circumstances influence successful well completion, Johnson Screens assumes no responsibility for final well performance nor awareness of local regulations pertaining to well installations.

Prepared by:Smith, Albert J

Send Samples to 1950 Old Highway 8, New Brighton, MN 55112

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Inland Bays Regional Waste Water

Sussex County Delaware

Well Logs

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Pump	Inland Bay Project	Before	7.53'
Serial #	DW-2	After	17.1883'
Drop		GPM	101
Tank		Grout	47'
Date	6/6/2017	Iron	
Permit No.	256937 (6" Well)	Hardness	
Name:	Sussex County-Inland Bays	Clorides	
Well Location	Mount Joy Road	pp	
	Millisboro, De 19966		

Formation Description	From	To	Water
Surface Soil	0	5	
Tan Sand with some Clay	5	10	
Clay	10	20	
Tan Sand Gravel	20	30	
Course Gold Sand / Tan Gravel	30	40	
Coarse Gold Sand with some medium Gravel	40	50	
Course Gold and Tan Sand and Gravel	40	50	
Course Gold Sand and Gravel some traces of Tan Clay	50	60	
Course Gold Sand with some Medium Gravel	60	70	
Medium to Course Sand and Gravel	70	81	
Gray / Tan Clay	81	82	
Set Well 6" X 80' PVC Flush joint PVC with 30' of #.040 Slot PVC.			
Flush Joint Screen , Well Gravel packed with #2 Well Gravel.			
Gravel Level terminated at 47'.			
Well Grouted with Bentonite Clay from 47' to surface.			

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Pump	Island Bay Project	Before	8'
Serial #	DW-1	After	18'
Drop		GPM	90
Tank		Grout	47'
Date	6/5/2017	Iron	
Permit No.	256938 (2" Well)	Hardness	
Name:	Sussex County-Inland Bays	Clorides	
Well Location	Mount Joy Road	PP	
	Millisboro, De		

Formation Description	From	To	Water
Surface soil some Brown Clay	0	5	
Tan Sand Medium	5	10	
Tan Sand Course , Some Light Gravel & Small Traces of Yellow &	10	20	
White Clay			
Tan Sand Course with Some Light Gravel	20	25	
Gold Sand Course Some light Gravel, Yellow & white trace Clay	25	30	
Course Gold & Tan Sand and Some Heavy Gravel	30	40	
Course Gold Sand and Some Medium Gravel	40	50	
Course Gold & Tan Sand & Some Medium Gravel, Some small traces	50	60	
of Tan Clay			
Course Gold Sand with Medium Gravel	60	70	
Medium to Course gold & Tan Sand with Small Gravel & Traces of	70	80	
Tan Clay			
Gray and Tan Clay	80	82	
Set Well 2"X 80' PVC flush Jpint PVC with 30' of #.040 Slot PVC Flush			
Joint Scren. Well Gravel Packed with #2 Well gravel.			
Gravel Level terminated at 47'			
Well Grouted with bontonite clay from 47' to surface.			

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Inland Bays Regional Waste Water

Sussex County Delaware

Aquifer Test Results

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Serial_number:
1052097
Solinst Level Looger/Model 3001
Constant rate/ Recovery test
Inland Bay 6" well test
Millisboro De

Inland Bays Aquifer Testing

Millisboro, De
72 Hour test start @ 6/19/2017 10:30 am Constant Flow

4" Orifice tube with 2 1/2" orifice Set at 101.8 GPM

Serial_number:
2032362
Solinst Level Looger/Model 3001
Constant rate/ Recovery test
Inland Bay 2"Observation well test
Millisboro De

Solinst Level Loggers where used with Barologger (at ground level) for instrument readings

			6" Well		43 " M Scope to Ground Level 6 " Manual readings M Scope FT above ground			2" OB Well	
Date	Time	ms	Static	TEMPERATURE				Static	TEMPERATURE
6/19/2017	10:30:00 AM	0	7.53	13.017	3.7	11.23	11.23	8	13.484
6/19/2017	10:31:00 AM	0	22.7371	12.97	3.7	26.4371	22.2	9.05	13.483
6/19/2017	10:32:00 AM	0	18.724	12.927	3.7	22.424	22.2	9.0468	13.481
6/19/2017	10:33:00 AM	0	18.7661	12.924	3.7	22.4661	22.2	9.0902	13.476
6/19/2017	10:34:00 AM	0	18.5506	12.933	3.7	22.2506	22.2	9.1122	13.471
6/19/2017	10:35:00 AM	0	19.4618	12.946	3.7	23.1618	22.3	9.1414	13.466
6/19/2017	10:36:00 AM	0	18.8998	12.962	3.7	22.5998	22.3	9.1765	13.462
6/19/2017	10:37:00 AM	0	18.127	12.98	3.7	21.827	22.3	9.1945	13.458
6/19/2017	10:38:00 AM	0	17.6378	12.998	3.7	21.3378	22.4	9.1991	13.455
6/19/2017	10:39:00 AM	0	18.3513	13.015	3.7	22.0513	22.4	9.21	13.451
6/19/2017	10:40:00 AM	0	18.6578	13.028	3.7	22.3578	22.4	9.2259	13.448
6/19/2017	10:42:00 AM	0	18.1344	13.051	3.7	21.8344	22.4	9.2283	13.442
6/19/2017	10:44:00 AM	0	18.6672	13.068	3.7	22.3672	22.4	9.2431	13.436
6/19/2017	10:46:00 AM	0	18.3402	13.081	3.7	22.0402	22.4	9.2411	13.433
6/19/2017	10:48:00 AM	0	19.0864	13.091	3.7	22.7864	22.4	9.2422	13.43
6/19/2017	10:50:00 AM	0	18.6881	13.098	3.7	22.3881	22.4	9.2545	13.427
6/19/2017	10:52:00 AM	0	17.9211	13.102	3.7	21.6211	22.4	9.2462	13.425
6/19/2017	10:54:00 AM	0	19.2047	13.105	3.7	22.9047	22.4	9.2501	13.422
6/19/2017	10:56:00 AM	0	18.4211	13.106	3.7	22.1211	22.4	9.2446	13.421
6/19/2017	10:58:00 AM	0	18.0433	13.108	3.7	21.7433	22.4	9.2421	13.419
6/19/2017	11:00:00 AM	0	18.5678	13.109	3.7	22.2678	22.35	9.2391	13.419
6/19/2017	11:05:00 AM	0	19.1112	13.112	3.7	22.8112	22.47	9.2561	13.415
6/19/2017	11:10:00 AM	0	18.7722	13.113	3.7	22.4722	22.45	9.2727	13.413
6/19/2017	11:15:00 AM	0	18.8957	13.111	3.7	22.5957	22.4	9.2675	13.411
6/19/2017	11:20:00 AM	0	19.5811	13.111	3.7	23.2811	22.4	9.2639	13.41
6/19/2017	11:25:00 AM	0	18.6558	13.112	3.7	22.3558	22.4	9.2587	13.41
6/19/2017	11:30:00 AM	0	19.0953	13.113	3.7	22.7953	22.4	9.2594	13.409
6/19/2017	11:40:00 AM	0	19.1297	13.114	3.7	22.8297	22.3	9.2571	13.407
6/19/2017	11:50:00 AM	0	18.6086	13.115	3.7	22.3086	22.45	9.2606	13.407
6/19/2017	12:00:00 PM	0	19.9178	13.112	3.7	23.6178	22.45	9.2713	13.406
6/19/2017	12:10:00 PM	0	17.9162	13.112	3.7	21.6162	22.45	9.2826	13.405
6/19/2017	12:20:00 PM	0	17.3935	13.112	3.7	21.0935	22.45	9.2721	13.405
6/19/2017	12:30:00 PM	0	18.7145	13.113	3.7	22.4145	22.45	9.2775	13.404
6/19/2017	12:40:00 PM	0	19.5154	13.114	3.7	23.2154	22.45	9.2832	13.404
6/19/2017	12:50:00 PM	0	19.5896	13.115	3.7	23.2896	22.45	9.2833	13.403
6/19/2017	1:00:00 PM	0	19.0061	13.116	3.7	22.7061	22.45	9.2903	13.403
6/19/2017	1:10:00 PM	0	17.7711	13.116	3.7	21.4711	22.45	9.2876	13.403
6/19/2017	1:20:00 PM	0	19.5554	13.117	3.7	23.2554	22.45	9.2914	13.401
6/19/2017	1:30:00 PM	0	18.873	13.119	3.7	22.573	22.45	9.2833	13.401
6/19/2017	2:30:00 PM	0	17.7478	13.141	3.7	21.4478	22.52	9.2906	13.4
6/19/2017	3:30:00 PM	0	19.1498	13.144	3.7	22.8498	22.5	9.324	13.399
6/19/2017	4:30:00 PM	0	17.9172	13.149	3.7	21.6172	22.5	9.3207	13.398
6/19/2017	5:30:00 PM	0	17.8144	13.153	3.7	21.5144	22.65	9.3461	13.397
6/19/2017	6:30:00 PM	0	18.9711	13.152	3.7	22.6711	22.65	9.3618	13.397
6/19/2017	7:30:00 PM	0	17.1479	13.149	3.7	20.8479	22.69	9.351	13.397
6/19/2017	8:30:00 PM	0	17.5243	13.151	3.7	21.2243	22.69	9.332	13.396
6/19/2017	9:30:00 PM	0	19.6385	13.149	3.7	23.3385	22.65	9.3061	13.397
6/19/2017	10:30:00 PM	0	17.695	13.149	3.7	21.395	22.6	9.3048	13.396
6/19/2017	11:30:00 PM	0	20.0354	13.148	3.7	23.7354	22.6	9.2548	13.395

SOMERSET Well DRILLING

Inland Bays Aquifer Testing

43 " M Scope to Ground Level

			6" Well		6 " Manual readings			2" OB Well	
					M Scope				
Date	Time	ms	Static	TEMPERATURE	FT above ground			Static	TEMPERATURE
6/20/2017	12:30:00 AM	0	19.4955	13.147	3.7	23.1955	22.6	9.1777	13.395
6/20/2017	1:30:00 AM	0	19.4463	13.148	3.7	23.1463	22.6	9.1234	13.393
6/20/2017	2:30:00 AM	0	19.3897	13.148	3.7	23.0897	22.6	9.0566	13.392
6/20/2017	3:30:00 AM	0	17.4197	13.149	3.7	21.1197	22.6	9.0001	13.392
6/20/2017	4:30:00 AM	0	17.6565	13.15	3.7	21.3565	22.55	8.9617	13.391
6/20/2017	5:30:00 AM	0	18.9879	13.148	3.7	22.6879	22.5	8.9064	13.39
6/20/2017	6:30:00 AM	0	18.4306	13.148	3.7	22.1306	22.5	8.871	13.389
6/20/2017	7:30:00 AM	0	16.9126	13.146	3.7	20.6126	22.51	8.8343	13.387
6/20/2017	8:30:00 AM	0	19.5036	13.143	3.7	23.2036	22.53	8.8729	13.388
6/20/2017	9:30:00 AM	0	18.2764	13.143	3.7	21.9764	22.55	8.9143	13.387
6/20/2017	10:30:00 AM	0	18.209	13.141	3.7	21.909	22.5	9.0112	13.388
6/20/2017	11:30:00 AM	0	18.1081	13.134	3.7	21.8081	22.43	9.06	13.387
6/20/2017	12:30:00 PM	0	19.2603	13.127	3.7	22.9603	22.41	9.0449	13.387
6/20/2017	1:30:00 PM	0	19.9037	13.128	3.7	23.6037	22.39	9.0182	13.386
6/20/2017	2:30:00 PM	0	17.7599	13.128	3.7	21.4599	22.4	9.0425	13.385
6/20/2017	3:30:00 PM	0	18.2581	13.129	3.7	21.9581	22.38	9.0377	13.385
6/20/2017	4:30:00 PM	0	18.7692	13.129	3.7	22.4692	22.39	8.9974	13.383
6/20/2017	5:30:00 PM	0	17.6316	13.132	3.7	21.3316	22.41	8.9514	13.384
6/20/2017	6:30:00 PM	0	17.6066	13.132	3.7	21.3066	22.44	8.8791	13.383
6/20/2017	7:30:00 PM	0	18.1196	13.13	3.7	21.8196	22.44	8.7999	13.382
6/20/2017	8:30:00 PM	0	17.5928	13.132	3.7	21.2928	22.44	9.2162	13.382
6/20/2017	9:30:00 PM	0	17.8596	13.134	3.7	21.5596	22.41	9.2149	13.383
6/20/2017	10:30:00 PM	0	19.4585	13.134	3.7	23.1585	22.39	9.201	13.382
6/20/2017	11:30:00 PM	0	18.1136	13.12	3.7	21.8136	22.39	9.1996	13.381
6/21/2017	12:30:00 AM	0	20.1801	13.117	3.7	23.8801	22.39	9.1928	13.381
6/21/2017	1:30:00 AM	0	17.4717	13.118	3.7	21.1717	22.39	9.1911	13.381
6/21/2017	2:30:00 AM	0	19.9355	13.123	3.7	23.6355	22.38	9.1992	13.38
6/21/2017	3:30:00 AM	0	19.1475	13.123	3.7	22.8475	22.39	9.1853	13.38
6/21/2017	4:30:00 AM	0	17.7145	13.124	3.7	21.4145	22.39	9.1802	13.38
6/21/2017	5:30:00 AM	0	18.5851	13.122	3.7	22.2851	22.5	9.1936	13.38
6/21/2017	6:30:00 AM	0	19.6998	13.122	3.7	23.3998	22.5	9.1889	13.379
6/21/2017	7:30:00 AM	0	18.576	13.123	3.7	22.276	22.5	9.1891	13.379
6/21/2017	8:30:00 AM	0	20.0665	13.122	3.7	23.7665	22.5	9.188	13.376
6/21/2017	9:30:00 AM	0	18.2813	13.118	3.7	21.9813	22.55	9.1803	13.376
6/21/2017	10:30:00 AM	0	17.9821	13.119	3.7	21.6821	22.5	9.1953	13.376
6/21/2017	11:30:00 AM	0	18.1123	13.119	3.7	21.8123	22.43	9.1957	13.376
6/21/2017	12:30:00 PM	0	19.088	13.117	3.7	22.788	22.41	9.1999	13.377
6/21/2017	1:30:00 PM	0	18.2149	13.119	3.7	21.9149	22.39	9.2028	13.377
6/21/2017	2:30:00 PM	0	19.7176	13.117	3.7	23.4176	22.4	9.2081	13.377
6/21/2017	3:30:00 PM	0	17.9245	13.115	3.7	21.6245	22.38	9.2107	13.377
6/21/2017	4:30:00 PM	0	18.0248	13.117	3.7	21.7248	22.38	9.2267	13.375
6/21/2017	5:30:00 PM	0	19.4308	13.117	3.7	23.1308	22.39	9.2226	13.375
6/21/2017	6:30:00 PM	0	18.2003	13.118	3.7	21.9003	22.41	9.2233	13.375
6/21/2017	7:30:00 PM	0	20.0392	13.121	3.7	23.7392	22.44	9.2243	13.375
6/21/2017	8:30:00 PM	0	17.5701	13.115	3.7	21.2701	22.44	9.2176	13.374
6/21/2017	9:30:00 PM	0	18.4222	13.118	3.7	22.1222	22.44	9.3155	13.374
6/21/2017	10:30:00 PM	0	17.8962	13.119	3.7	21.5962	22.41	9.2773	13.373
6/21/2017	11:30:00 PM	0	18.1508	13.117	3.7	21.8508	22.39	9.2578	13.373
6/22/2017	12:30:00 AM	0	19.9673	13.117	3.7	23.6673	22.39	9.2195	13.371
6/22/2017	1:30:00 AM	0	19.459	13.115	3.7	23.159	22.39	9.1786	13.372
6/22/2017	2:30:00 AM	0	18.0771	13.115	3.7	21.7771	22.39	9.1524	13.371
6/22/2017	3:30:00 AM	0	17.5155	13.117	3.7	21.2155	22.38	9.0903	13.37
6/22/2017	4:30:00 AM	0	17.9479	13.115	3.7	21.6479	22.39	9.0409	13.37
6/22/2017	5:30:00 AM	0	19.1211	13.116	3.7	22.8211	22.44	8.9831	13.37
6/22/2017	6:30:00 AM	0	18.4679	13.113	3.7	22.1679	22.43	8.9489	13.368
6/22/2017	7:30:00 AM	0	17.3282	13.117	3.7	21.0282	22.43	8.9323	13.367
6/22/2017	8:30:00 AM	0	17.334	13.114	3.7	21.034	22.4	9.0351	13.367
6/22/2017	9:30:00 AM	0	17.9287	13.116	3.7	21.6287	22.4	9.2003	13.367
6/22/2017	10:30:00 AM	0	17.1883	13.117	3.7	20.8883	22.4	9.3026	13.365
Pump Off									
Start Recovery Test									
6/22/2017	10:31:00 AM	0	8.2474	13.077	3.7	11.9474	11.68	8.5747	13.365
6/22/2017	10:32:00 AM	0	8.0068	13.034	3.7	11.7068	11.44	8.3981	13.364
6/22/2017	10:33:00 AM	0	7.8975	13.02	3.7	11.5975	11.36	8.3126	13.362
6/22/2017	10:34:00 AM	0	7.834	13.013	3.7	11.534	11.3	8.2636	13.361
6/22/2017	10:35:00 AM	0	7.7953	13.012	3.7	11.4953	11.26	8.2339	13.36
6/22/2017	10:36:00 AM	0	7.771	13.013	3.7	11.471	11.23	8.2092	13.36
6/22/2017	10:37:00 AM	0	7.7504	13.015	3.7	11.4504	11.21	8.1914	13.359
6/22/2017	10:38:00 AM	0	7.7352	13.017	3.7	11.4352	11.2	8.1871	13.359

Inland Bays Aquifer Testing

43 " M Scope to Ground Level

			6" Well		6 " Manual readings			2" OB Well	
					M Scope				
Date	Time	ms	Static	TEMPERATURE	FT above ground			Static	TEMPERATURE
6/22/2017	10:39:00 AM	0	7.7206	13.022	3.7	11.4206	11.19	8.1619	13.36
6/22/2017	10:40:00 AM	0	7.7145	13.03	3.7	11.4145	11.18	8.1624	13.359
6/22/2017	10:42:00 AM	0	7.6993	13.049	3.7	11.3993	11.15	8.1498	13.37
6/22/2017	10:44:00 AM	0	7.6946	13.075	3.7	11.3946	11.15	8.15	13.372
6/22/2017	10:46:00 AM	0	7.6925	13.103	3.7	11.3925	11.13	8.1398	13.372
6/22/2017	10:48:00 AM	0	7.6887	13.129	3.7	11.3887	11.13	8.1393	13.373
6/22/2017	10:50:00 AM	0	7.6887	13.14	3.7	11.3887	11.13	8.1394	13.374
6/22/2017	10:52:00 AM	0	7.7003	13.147	3.7	11.4003	11.12	8.1476	13.374
6/22/2017	10:54:00 AM	0	7.7091	13.161	3.7	11.4091	11.12	8.1643	13.374
6/22/2017	10:56:00 AM	0	7.7106	13.207	3.7	11.4106	11.11	8.161	13.374
6/22/2017	10:58:00 AM	0	7.7078	13.255	3.7	11.4078	11.11	8.1617	13.374
6/22/2017	11:00:00 AM	0	7.7278	13.285	3.7	11.4278	11.11	8.1858	13.375
6/22/2017	11:05:00 AM	0	7.7364	13.313	3.7	11.4364	11.1	8.1919	13.363
6/22/2017	11:10:00 AM	0	7.7128	13.338	3.7	11.4128	11.1	8.1732	13.363
6/22/2017	11:15:00 AM	0	7.7007	13.343	3.7	11.4007	11.09	8.158	13.363
6/22/2017	11:20:00 AM	0	7.6916	13.334	3.7	11.3916	11.09	8.1525	13.363
6/22/2017	11:25:00 AM	0	7.5773	13.332	3.7	11.2773	11.09	8.0373	13.364
6/22/2017	11:30:00 AM	0	7.4585	13.334	3.7	11.1585	11.08	7.9163	13.364
6/22/2017	11:40:00 AM	0	7.4679	13.357	3.7	11.1679	11.08	7.9375	13.364
6/22/2017	11:50:00 AM	0	7.48	13.365	3.7	11.18	11.08	7.9334	13.366
6/22/2017	12:00:00 PM	0	7.4771	13.357	3.7	11.1771	11.08	7.8602	13.365
6/22/2017	12:10:00 PM	0	7.4761	13.354	3.7	11.1761	11.08	7.582	13.365
6/22/2017	12:20:00 PM	0	7.4747	13.344	3.7	11.1747	11.07	7.5702	13.366
6/22/2017	12:30:00 PM	0	7.4844	13.331	3.7	11.1844	11.07	7.491	13.367
6/22/2017	12:40:00 PM	0	7.4733	13.328	3.7	11.1733	11.07	7.4359	13.367
6/22/2017	12:50:00 PM	0	7.4678	13.342	3.7	11.1678	11.06	7.3533	13.368
6/22/2017	1:00:00 PM	0	7.4776	13.319	3.7	11.1776	11.06	7.2646	13.368
6/22/2017	1:10:00 PM	0	7.4828	13.304	3.7	11.1828	11.06	7.1661	13.368
6/22/2017	1:20:00 PM	0	7.4678	13.291	3.7	11.1678	11.06	7.0885	13.368
6/22/2017	1:30:00 PM	0	7.4692	13.289	3.7	11.1692	11.06	8.1525	13.367
6/22/2017	2:30:00 PM	0	7.4001	13.243	3.7	11.1001	11.04	8.1531	13.367
6/22/2017	3:30:00 PM	0	7.1237	13.203	3.7	10.8237	11.04	8.1598	13.367
6/22/2017	4:30:00 PM	0	7.109	13.167	3.7	10.809	11.03	8.1504	13.368
6/22/2017	5:30:00 PM	0	7.0293	13.14	3.7	10.7293	11.01	8.1584	13.368
6/22/2017	6:30:00 PM	0	6.9714	13.12	3.7	10.6714	11.01	8.1564	13.367
6/22/2017	7:30:00 PM	0	6.8938	13.105	3.7	10.5938	11.01	8.1566	13.368
6/22/2017	8:30:00 PM	0	6.8031	13.091	3.7	10.5031	11.01	8.158	13.368
6/22/2017	9:30:00 PM	0	6.7117	13.08	3.7	10.4117	11.01	8.1505	13.368
6/22/2017	10:30:00 PM	0	6.6303	13.073	3.7	10.3303	11.01	8.1549	13.368

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

PHONE: 302-739-9944
FAX: 302-739-7764

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

WELL COMPLETION REPORT

http://www.dnrec.state.de.us/

APPLICATION MUST BE SUBMITTED AND PERMIT RECEIVED BEFORE DRILLING IS STARTED.

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PAGE # 1 OF 4 PAGES
PERMIT #: 256937

Owner:	Sussex County
Address:	PO Box 589
	Georgetown DE US 19947
Telephone:	(410)546-6462
Email:	
Permit #:	256937
Local ID:	
Licensed Preparer / WC:	Somerset Well Drilling Co Inc
License #:	4033
Well Driller in Charge:	
License #:	4034
Construction Method:	Mud Rotary
Total Depth of Excavation:	80.00 feet
Construction Date:	6/22/2017

Casing	Top	Bottom	Diameter	Material
Inner Casing	0.00	47.00	6.00	PVC

Screen Material:	PVC	**Diameter:**	6.00
Top:	47.00	**Bottom:**	80.00
Type of Grout:	Bentonite		
Top:	0.00	**Bottom:**	47.00
Gravel Pack Interval:			
Top:	47.00	**Bottom:**	80.00
Type of Non-Grout Backfill of Well Annulus:			None
Top:	0.00	**Bottom:**	0.00
Screen Slot Size:	0		
Gravel Pack Size:	2		
Static Water Level:	8.00 ft.		Below Ground Surface
Date:	6/22/2017		
Pumping Water Level:	17.0000 ft.		
Date:	6/22/2017		
After:	72.00 hrs.		
Pumping at:	101.00 GPM		
Was a Geophysical Log Taken?	Yes		
Parcel Size:	Greater than 0.5 Acre		
Proposed Well will be:			
3450.00	**Feet of the FRONT property line**		
3550.00	**Feet of the BACK property line**		
1020.00	**Feet of the LEFT property line**		
2800.00	**Feet of the RIGHT property line**		
1020.00	**Feet from the NEAREST road**		
1.00	**Feet from the SEPTIC TANK and all components**		
2.00	**Feet from the SEPTIC DRAINFIELD/CESSPOOL**		
0.00	**Feet from the CENTRAL SEWER LINE**		

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT.

Signature - Licensed Preparer/Well Contractor **Date**

Signature - Property Owner **Date**

LOCATION MAP - ROAD MAP

County:	Sussex
Tax Parcel:	2-34-21.00-0151.03
Lot #:	

WELL HEAD COMPLETION

Type:	Other
Other:	Well Head Protector
Well Head Completed:	30.00 in.
Above Ground Surface	
Was the Well Tag attached in accordance with current regulations?	
Yes	
Comments:	

X:	214190.70
Y:	70135.64

Ref#: 25958

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER
RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

PHONE: 302-739-9944
FAX: 302-739-7764

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL

WELL COMPLETION REPORT

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PAGE # 2 OF 4 PAGES

PERMIT #: 256937

FORMATION LOG

Formation Type:	Other	**Other:**	Surface Soil
Formation Type With:	Other	**Other:**	N/A
From:	0.00	**To:**	5.00
Color:	N/A		
Texture		**Other:**	
To:		**Other:**	
Cement:		**Other**	
Sorting:		**Other:**	
Hardness:		**Other:**	
Comment:			
Formation Type:	Coarse Sand	**Other:**	
Formation Type With:	Clay	**Other:**	
From:	5.00	**To:**	10.00
Color:	Tan		
Texture	Coarse	**Other:**	
To:	Coarse	**Other:**	
Cement:		**Other**	
Sorting:		**Other:**	
Hardness:		**Other:**	
Comment:			
Formation Type:	Clay	**Other:**	
Formation Type With:	Clay	**Other:**	
From:	10.00	**To:**	20.00
Color:	N/A		
Texture		**Other:**	
To:		**Other:**	
Cement:		**Other**	
Sorting:		**Other:**	
Hardness:		**Other:**	
Comment:			
Formation Type:	Gravel	**Other:**	
Formation Type With:	Sand	**Other:**	
From:	20.00	**To:**	30.00
Color:	Tan		
Texture		**Other:**	
To:		**Other:**	
Cement:		**Other**	
Sorting:		**Other:**	
Hardness:		**Other:**	
Comment:			
Formation Type:	Gravel	**Other:**	
Formation Type With:	Sand	**Other:**	Coarse
From:	30.00	**To:**	40.00
Color:	Tan & Gold		
Texture		**Other:**	
To:		**Other:**	
Cement:		**Other**	
Sorting:		**Other:**	
Hardness:		**Other:**	

Ref#: 25958

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER
RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

PHONE: 302-739-9944
FAX: 302-739-7764

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
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PERMIT #: 256937

Comment:			
Formation Type:	Gravel	**Other:**	Medium
Formation Type With:	Sand	**Other:**	Coarse
From:	40.00	**To:**	50.00
Color:	Gold		
Texture		**Other:**	
To:		**Other:**	
Cement:		**Other**	
Sorting:		**Other:**	
Hardness:		**Other:**	
Comment:			
Formation Type:	Gravel	**Other:**	Medium
Formation Type With:	Sand	**Other:**	Coarse
From:	50.00	**To:**	60.00
Color:	Gold & Tan		
Texture		**Other:**	
To:		**Other:**	
Cement:		**Other**	
Sorting:		**Other:**	
Hardness:		**Other:**	
Comment:	Coarse Gold Sand & Gravel some traces of Tan Clay.		
Formation Type:	Gravel	**Other:**	Medium
Formation Type With:	Sand	**Other:**	Coarse
From:	60.00	**To:**	70.00
Color:	Gold		
Texture		**Other:**	
To:		**Other:**	
Cement:		**Other**	
Sorting:		**Other:**	
Hardness:		**Other:**	
Comment:			
Formation Type:	Gravel	**Other:**	Medium
Formation Type With:	Sand	**Other:**	Medium to Coarse
From:	70.00	**To:**	81.00
Color:	N/A		
Texture		**Other:**	
To:		**Other:**	
Cement:		**Other**	
Sorting:		**Other:**	
Hardness:		**Other:**	
Comment:			
Formation Type:	Clay	**Other:**	
Formation Type With:	Clay	**Other:**	
From:	81.00	**To:**	82.00
Color:	Gray Tan		
Texture		**Other:**	
To:		**Other:**	
Cement:		**Other**	
Sorting:		**Other:**	
Hardness:		**Other:**	

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER
RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

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PAGE # 4 **OF** 4 **PAGES**

PERMIT #: 25937

Comment:

Ref#: 25958

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

PHONE: 302-739-9944
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STATE OF DELAWARE
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APPLICATION MUST BE SUBMITTED AND PERMIT RECEIVED BEFORE DRILLING IS STARTED.

- OFFICIAL USE ONLY -

PAGE # 1 OF 4 PAGES
PERMIT #: 256938

Owner:	Sussex County
Address:	PO Box 589
	Georgetown DE US 19947
Telephone:	(410)546-6462
Email:	
Permit #:	256938
Local ID:	
Licensed Preparer / WC:	Somerset Well Drilling Co Inc
License #:	4033
Well Driller in Charge:	
License #:	4034
Construction Method:	Mud Rotary
Total Depth of Excavation:	80.00 feet
Construction Date:	6/20/2017

Casing	Top	Bottom	Diameter	Material
Inner Casing	0.00	47.00	2.00	PVC

Screen Material:	PVC	**Diameter:**	2.00
Top:	47.00	**Bottom:**	80.00
Type of Grout:	Bentonite		
Top:	0.00	**Bottom:**	47.00
Gravel Pack Interval:			
Top:	47.00	**Bottom:**	80.00
Type of Non-Grout Backfill of Well Annulus:			None
Top:	0.00	**Bottom:**	0.00
Screen Slot Size:	0		
Gravel Pack Size:	2		
Static Water Level:	8.00 ft.		Below Ground Surface
Date:	6/20/2017		
Pumping Water Level:	18.0000 ft.		
Date:	6/20/2017		
After:	4.00 hrs.		
Pumping at:	90.00 GPM		
Was a Geophysical Log Taken?			Yes
Parcel Size:	Greater than 0.5 Acre		

Proposed Well will be:

3500.00	**Feet of the FRONT property line**
3450.00	**Feet of the BACK property line**
1120.00	**Feet of the LEFT property line**
2700.00	**Feet of the RIGHT property line**
1120.00	**Feet from the NEAREST road**
1.00	**Feet from the SEPTIC TANK and all components**
2.00	**Feet from the SEPTIC DRAINFIELD/CESSPOOL**
0.00	**Feet from the CENTRAL SEWER LINE**

I HEREBY AFFIRM THE INFORMATION I HAVE SUBMITTED IS ACCURATE AND CORRECT.

Signature - Licensed Preparer/Well Contractor **Date**

Signature - Property Owner **Date**

LOCATION MAP - ROAD MAP

County:	Sussex
Tax Parcel:	2-34-21.00-0151.03
Lot #:	

WELL HEAD COMPLETION

Type:	Other
Other:	Well Head Protector
Well Head Completed:	30.00 in.
Above Ground Surface	

Was the Well Tag attached in accordance with current regulations?
Yes

Comments:

X:	214273.25
Y:	70173.74

Ref#: 25959

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER
RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

PHONE: 302-739-9944
FAX: 302-739-7764

STATE OF DELAWARE
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PAGE # 2 OF 4 PAGES
PERMIT #: 256938

FORMATION LOG

Formation Type:	Other	**Other:**	Surface Soil
Formation Type With:	Clay	**Other:**	
From:	0.00	**To:**	5.00
Color:	Brown		
Texture		**Other:**	
To:		**Other:**	
Cement:		**Other**	
Sorting:		**Other:**	
Hardness:		**Other:**	
Comment:			

Formation Type:	Medium Sand	**Other:**	
Formation Type With:	Sand	**Other:**	
From:	5.00	**To:**	10.00
Color:	Tan		
Texture	Medium	**Other:**	
To:	Medium	**Other:**	
Cement:		**Other**	
Sorting:		**Other:**	
Hardness:		**Other:**	
Comment:			

Formation Type:	Gravel	**Other:**	Light
Formation Type With:	Sand	**Other:**	Coarse
From:	10.00	**To:**	20.00
Color:	Tan Yellow White		
Texture		**Other:**	
To:		**Other:**	
Cement:		**Other**	
Sorting:		**Other:**	
Hardness:		**Other:**	
Comment:	Tan Coarse Sand, Some Light Gravel & Small Traces of Yellow & White Clay.		

Formation Type:	Gravel	**Other:**	Light
Formation Type With:	Sand	**Other:**	Coarse
From:	20.00	**To:**	25.00
Color:	Tan		
Texture		**Other:**	
To:		**Other:**	
Cement:		**Other**	
Sorting:		**Other:**	
Hardness:		**Other:**	
Comment:			

Formation Type:	Gravel	**Other:**	Light
Formation Type With:	Sand	**Other:**	Coarse
From:	25.00	**To:**	30.00
Color:	Gold Yellow White		
Texture		**Other:**	
To:		**Other:**	
Cement:		**Other**	
Sorting:		**Other:**	
Hardness:		**Other:**	

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER
RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

PHONE: 302-739-9944
FAX: 302-739-7764

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PERMIT #: 256938

Comment:	Gold Coarse Sand, Some Light Gravel, Yellow & White Clay Traces.		
Formation Type:	Gravel	**Other:**	Heavy
Formation Type With:	Sand	**Other:**	Coarse
From:	30.00	**To:**	40.00
Color:	Gold Tan		
Texture		**Other:**	
To:		**Other:**	
Cement:		**Other**	
Sorting:		**Other:**	
Hardness:		**Other:**	
Comment:			
Formation Type:	Gravel	**Other:**	Medium
Formation Type With:	Sand	**Other:**	Coarse
From:	40.00	**To:**	50.00
Color:	Gold		
Texture		**Other:**	
To:		**Other:**	
Cement:		**Other**	
Sorting:		**Other:**	
Hardness:		**Other:**	
Comment:			
Formation Type:	Gravel	**Other:**	Medium
Formation Type With:	Sand	**Other:**	Coarse
From:	50.00	**To:**	60.00
Color:	Gold Tan & Tan		
Texture		**Other:**	
To:		**Other:**	
Cement:		**Other**	
Sorting:		**Other:**	
Hardness:		**Other:**	
Comment:	Coarse Gold & Tan Sand & Some Medium Gravel, Some Small Traces of Tan Clay.		
Formation Type:	Gravel	**Other:**	Medium
Formation Type With:	Sand	**Other:**	Coarse
From:	60.00	**To:**	70.00
Color:	Gold		
Texture		**Other:**	
To:		**Other:**	
Cement:		**Other**	
Sorting:		**Other:**	
Hardness:		**Other:**	
Comment:			
Formation Type:	Gravel	**Other:**	Small
Formation Type With:	Sand	**Other:**	Medium to Coarse
From:	70.00	**To:**	80.00
Color:	Gold Tan & Tan		
Texture		**Other:**	
To:		**Other:**	
Cement:		**Other**	
Sorting:		**Other:**	
Hardness:		**Other:**	

MAIL TO:

WATER SUPPLY SECTION
DIVISION OF WATER
RESOURCES
89 KINGS HIGHWAY
DOVER, DELAWARE 19901

PHONE: 302-739-9944
FAX: 302-739-7764

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL

WELL COMPLETION REPORT

http://www.dnrec.state.de.us/

APPLICATION MUST BE SUBMITTED AND PERMIT RECEIVED BEFORE DRILLING IS STARTED.

- OFFICIAL USE ONLY -

PAGE # 4 **OF** 4 **PAGES**

PERMIT #: 256938

Comment:	Medium to Coarse Gold & Tan Sand with Small Gravel & Traces of Tan Clay.		
Formation Type:	Clay	**Other:**	
Formation Type With:	Clay	**Other:**	
From:	80.00	**To:**	82.00
Color:	Gray & Tan		
Texture		**Other:**	
To:		**Other:**	
Cement:		**Other**	
Sorting:		**Other:**	
Hardness:		**Other:**	
Comment:			

Ref#: 25959